

The Iron Age

A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by DAVID WILLIAMS, No. 83 Reade Street, New York. Entered at the Post Office, New York, as Second-Class Matter.

Vol. XXV: No. 18.

New York, Thursday, April 29, 1880.

\$2.50 a Year, Including Postage.
Single Copies, Ten Cents.

On the Structure of Cast Steel Ingots.

Among those who have made the manufacture of steel a subject of scientific study, D. Chernoff occupies a prominent place, and English and American metallurgists are much indebted to Mr. William Anderson, of Erit, for performing the task of translating his papers read before the Imperial Russian Technical Society. Chernoff's latest contribution to the metallurgy of steel is an elaborate essay on the structure of cast-steel ingots, a translation of which has been published by the Institution of Mechanical Engineers, from which we take the following:

In view of the immense advantages which accrue from the facilities offered by the process of casting, every effort ought to be

the ingot. This cavity penetrates deeply along the axis of the casting, and is surrounded by unsound metal. A certain thickness of metal included between the spongy crust and the porous heart, appears to be sound and compact. Under certain circumstances bubbles are not formed, but instead a needle-like, acicular structure, indicated on the left of Fig. 1, is strongly developed. An examination of the fractured surface shows that the acicular layer consists of a conglomeration of irregular prismoidal bodies, arranged at right angles to the sides of the ingot, as shown in Fig. 2. The cohesion between the prisms is not great, so that ingots having this structure break up with comparative ease, fracture taking place along the facets of the prisms and presenting a dead, silvery hue.

with the varying rate at which the bubble grows in volume compared to that at which the thickness of the solid layer increases. It will assume the shape shown in Fig. 4, if the former is more rapid; that of Fig. 5, if the rate of both is approximately equal, and that of Fig. 6 if the setting of the steel goes on very rapidly, the latter case being very rare, however. M. Chernoff states that the best method to arrest the formation of these blow-holes in the outer crust is to cast the steel hot. Steel of a certain temperature will give sound castings in a sand mold, while it makes a porous ingot in a metallic mold. An extremely interesting experiment which has been frequently repeated, namely, that of pouring moderately hot steel into a mold half metallic and half lined with sand, always gave ingots porous in contact with

of the casting have set, or if the plunger cannot follow the shrinkage of the steel, because its movement is arrested by solidification of the other portions of the ingot. Figs. 9, 10 and 11 represent a 3-ton compressed ingot, 21½ inches in diameter and 5 feet 7 inches long, which was pressed for three-quarters of an hour, while later experience has taught that one hour and a quarter is necessary in order to produce sound work.

While the blow-holes of the outer layer generally present a clean, silvery appearance, the contraction cavities of the top part of the ingots are found to be covered with minute crystalline growths, an enlarged view of a group of which, taken from a 27-ton ingot, is given in Fig. 12. These crystals are of the skeleton or discontinuous

more prevalent with the harder varieties of steel. The chemical composition of these crystals does not vary from that of the body of the steel. When the metal is still hot and fluid the crystals form one solid mass by constant accessions from the still melted metal. When, however, toward the center of the ingot this supply ceases and the metal becomes viscous, the structure of the steel becomes more and more porous. Fig. 15 shows a portion of this central part. On the other hand, the more closely the crystals are packed together the quicker their branches grow, the more difficult it becomes for the metal to flow to the crystals in the course of formation, notwithstanding that the steel remains very fluid. This state of things exists during the solidification of the external layers of an ingot cast in a metallic



Fig. 1.

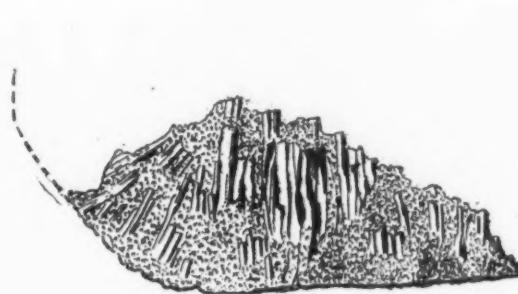


Fig. 2.

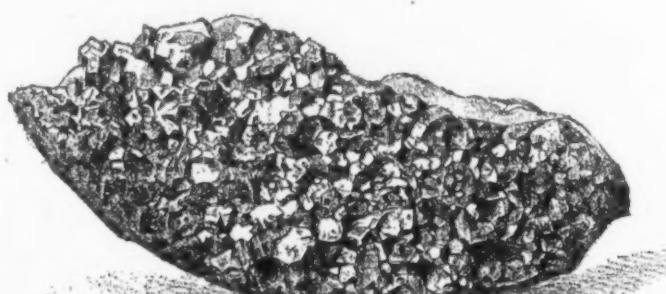


Fig. 3.

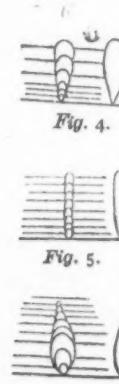


Fig. 4.

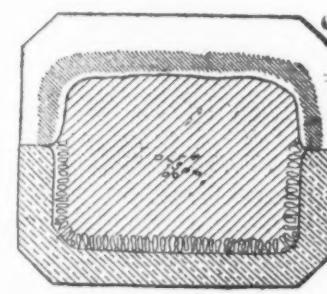


Fig. 5.

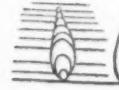


Fig. 6.



Fig. 7.

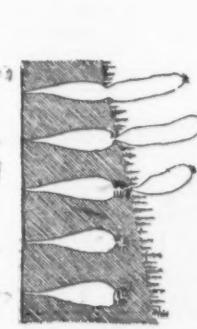


Fig. 8.

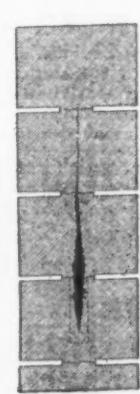


Fig. 9.



Fig. 10.



Fig. 11.



Fig. 12.



Fig. 13.

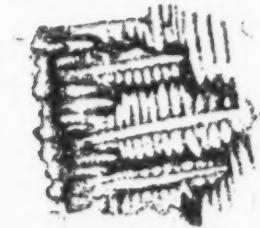


Fig. 14.

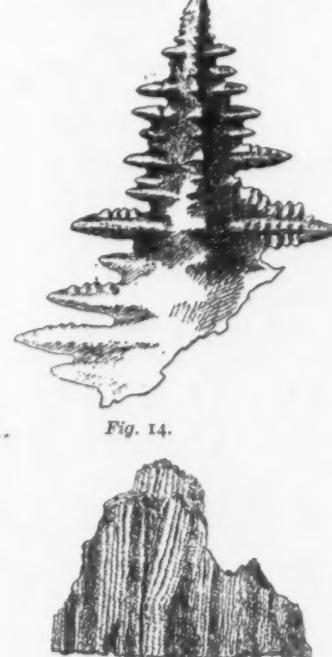


Fig. 15.

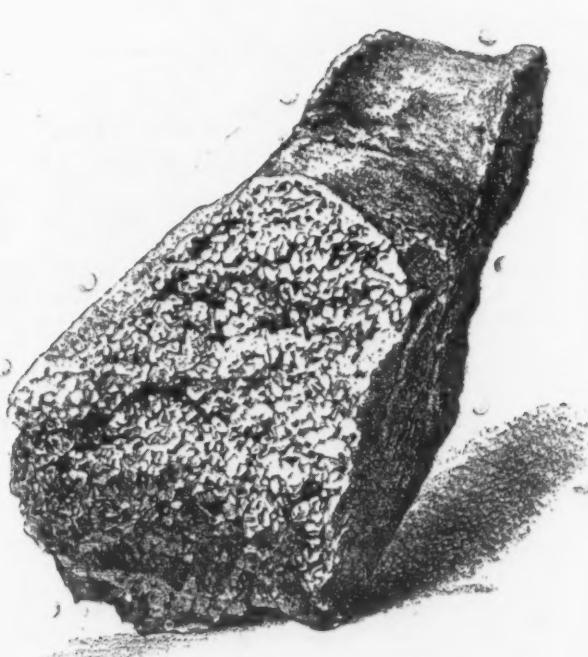


Fig. 16.

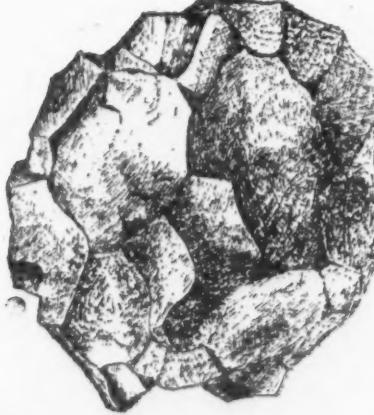


Fig. 17.



Fig. 18.

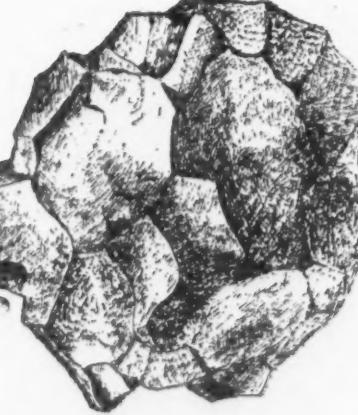


Fig. 19.



Fig. 20.

made to detect and counteract causes leading to failure of producing good steel castings. The chief defect is the honey-combing, caused partly by the presence of gas bubbles, and partly by cavities due to contraction in cooling. Occasionally external cracks are developed, or the texture of the steel becomes such as to prevent its use for castings. A thorough inquiry into these causes must precede all attempts at improvement. Taking the simplest form—that of a cylindrical ingot cast in a metallic mold—the metal will, instead of being a solid mass, present a casting permeated by a number of cavities, as shown in Fig. 1. Along the surfaces in contact with the mold, many bubbles penetrate into the body of the ingot more or less deeply, according to the circumstances under which it was cast and the quality of the steel used, giving the external layer a spongy appearance. A large cavity, having the shape of an irregular funnel, is formed in the upper part of

the circular layer comes one of the metallic mold, and perfectly sound on the side next to the ganister lining. Fig. 7 represents an actual section of such an ingot reduced to one-fifth of its natural size. By solidification of the upper surface the free gases cannot escape, and they collect under the crust, acquire considerable tension and arrest the further formation of blow-holes. But if the crust is weak, the gases break through it, the pressure is suddenly relieved and a fresh evolution of gas takes place, accompanied by the formation of a second row of bubbles, chiefly in the upper portion of the casting, the effect being clearly shown by a sharp line of demarcation shown in Fig. 8. The evolution of gases does not cease until the entire solidification of the ingot, and there are, therefore, many blow-holes in the upper portions of the ingot.

Even in Whitworth compressed steel these defects are exhibited by the ingots if the pressure ceases before the central portions

type, and occasionally a twin arrangement, such as that shown in Fig. 13, is observed. This last crystal, which is shown 140 times enlarged, was taken from the contraction cavity of a 5-cwt. ingot. From the presence of these crystalline structures it is safe to conclude that the setting of steel does not take place by the uninterrupted addition of smooth layers, but by a continued growth of discontinuous crystals in a radial direction from the cooling surfaces of the mold toward the center of the ingot. There is much analogy in the setting of steel and of ordinary cast iron, and there is danger, therefore, of the production of planes of weakness similar to those well known in iron castings. It should be added that crystalline forms like that shown in Fig. 14 are also found in cast-iron contraction cavities, which points to a similarity of origin of the structure of both. M. Chernoff states that these peculiarities of the structure of the sides of contraction cavities are more marked and

mold, causing the formation of acicular outer layers, illustrated in Fig. 2, and in cross section they may be imagined to present, on an enlarged scale, an aspect like that of Fig. 16.

The weakness of cohesion between the prismatic crystals is the chief cause of the formation of external cracks during the cooling of the ingots, the number depending upon inequalities in the mold and the temperature of the metal. The surfaces of the cracks have a prismatic structure and the imprints of discontinuous crystals may be distinctly seen, as in Fig. 17, which represents in full size the surface of a crack produced in a bright red ingot, the central portion of which was still fluid. It should be noted also that owing to a tension produced by unequal cooling of the outer and inner layers, the cohesion of the crystals of the latter is considerably affected. To this tension is due also the granulated structure of the layer within the honeycombed skin, a

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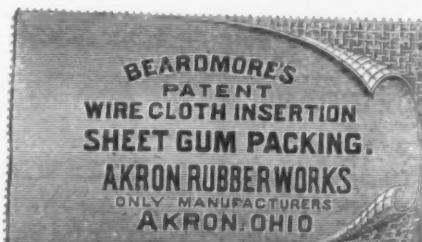
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fact which M. Chernoff has proved also experimentally. Fig. 18 represents the fracture of a highly granulated ingot, one of the grains of which is shown magnified seven times in Fig. 19.

The methods of overcoming the imperfections in steel castings may be arranged under the following heads:

1. Without altering the system of casting, to limit the ingots to the simplest forms and to work out the required shapes by means of hammers and rolls.

2. To subject the steel, during the process of setting, to heavy pressure; although the simplest forms of ingots only can be used, and forging and hammering must be resorted to produce the shapes required.

3. To use chemical magnets in order to arrest the formation of gases, and thus to obtain castings of the most varied forms and dimensions in ordinary sand or metallic molds.

In regard to the first method little need be said, the imperfection of the drawings relating to some experiments made by M. Chernoff rendering them obscure. As far as the second is concerned, the Whitworth process of compression is discussed. More recent developments with Capt. Jones's method, as practiced at the Edgar Thomson Works and elsewhere, have placed a good method at the disposal of steel manufacturers. In the third class the Terrenoire process assumes a prominent place. Mr. Holley's elaborate paper on the subject makes further data unnecessary.

In conclusion, we may mention a suggestion thrown out by M. Chernoff referring to a means of preventing the formation of blow-holes and of acicular and granular structure. He says: "If, during the pouring of an ingot the mold were caused to rotate at considerable velocity, then the discontinuous crystals tending to form at right angles to the sides would not be in a condition to develop so rapidly as if the mold were at rest, and the steel would set in smooth layers of amorphous structure. A perfectly sound casting would be produced, which would not require hammering or pressure. No experiments appear to have been made to test this idea."

Labor and the Store System.

The New York Times, in an editorial on this subject, says:

One of the worst practical evils in the present relations between capital and labor, and one to which the champions of the latter might wisely give more attention, is the device of attaching an employer's store to the manufactory. It is by no means a commonly found system—for it could never obtain a foothold in cities and large towns, where the wholesome rule of regular cash payment of wages, as fast as earned, prevails—but it flourishes in back districts, where the ancient and thoroughly mischievous "credit" habit of dealing still lingers. Those of us who passed our boyhood in country towns may remember how almost invariable was the practice to "charge it," and to settle occasionally, or never, and how constant were the inquiry and guess whether such and such a person was "good;" also that loss by bad debts was a considerable factor in the calculations and results of the country trader. This practice—born of the fewness of banks, scarcity of circulating money, and slowness of communication—lingers yet in districts where these conditions comparatively prevail, and particularly where production is confined almost exclusively to a single interest. The custom of yearly or semi-yearly settlements with purchasers is made the excuse for a tacit understanding under which employees have no right to demand payments at shorter intervals, although small sums of cash are granted as a concession and charged upon account. The extent of this concession varies with different employees, and the tendency probably is toward a slow adoption of the full cash system. Store orders are given to some extent, but as they are fully or very nearly the equivalent of cash in purchasing power at the stores where presented, they are a convenience which harms no one, unless in delaying the adoption of the cash system. Some of the largest manufacturers adopt stores on their own account, and they pay probably nine-tenths of their wages both to hands in the shops directly and to the many others who do work in their houses, in goods, the tacit, but quite distinct, understanding being that employment is granted on this condition.

Money is paid sometimes in dribs and drabs, as a favor, but this favoring has to be regulated with discretion lest the majority remonstrate at the favoritism. The employees are free to demand money, and may get it, but the result will be that when the next year's hiring comes around, the one who rebelled at the system will be left outside. If a minor is employed, cash may be paid during minority; when he marries and sets up housekeeping the store will get a dependent. If, however, he boards, his landlord will probably be a shopman—because the shop dominates and absorbs everything—and his board can be credited to the landlord, to be taken out in goods. The storekeeper-employer charges his own prices. As a concession to labor, he can advance the nominal day's wages 10 per cent., and can then dilute the currency in which he pays by marking up his goods 15 per cent.; he can even make the Dutch storekeeper's boast that he had just made a profit—by marking up his goods. If somebody wants granulated sugar, when he keeps only brown or A; if his prints are remarkable for ugliness and sleaziness; if the workman finds all the boots in stock a size too large or two sizes too small, the store has no suggestion and no answer except that there is the stock. There is no competition, for the general store on the same street has been driven out, and although there are stores in the neighboring village, there is no cash. The currency is literally what inflationists want all American money to be—non-exportable. The store resists yielding of money, for it has goods; it will not give orders to be expedited elsewhere, for it has goods, and its goods are not receivable for goods at other places. The employee must live on the store—and let it live on him. For almost all

he consumes, beyond his garden produce, he must go to it, receiving money enough to tantalize him with an occasional reminder. His "dollar" is a cheat and a fiction, and if he comes out at the end of the year without finding the store a little ahead of him in the matter of balance due, he has "saved" himself for that year. The store fattens its owner, the store makes lean the place.

This is a sketch of the store system at its best; for the worst, one must inspect the Michigan mining districts—as to which Mr. Tilden might, perhaps, testify if he would—certain districts in the South, some in Pennsylvania and scattered ones elsewhere. The effects of the system are obvious. Its profitability to the employer who works it is as if he were permitted to cut his bank notes into halves and quarters, each piece being receivable as a whole note; the effect upon the employed, however, is not measured by that illustration. They must not only pay exorbitantly for what they want; but must take what they do not want; improvidence is bred in them by discouragement; their manhood shrivels, and they become mere dependents; they can neither help themselves where they are, nor muster resources enough to get away; it is hardly an extravagant figure to call them slaves.

Section 3583 Revised Statutes prohibits making or paying out any check or memorandum intended to be used as currency, and for an amount less than \$1. Other than this, we recall no United States law bearing upon the subject. But it appears that attempts to reach the evil have been made in some States. A bill was recently before the New Jersey Senate to abolish the order system and forbid any deduction by employers for debts from the cash earnings of workmen. A store order for one cent, payable in 10 years, issued by a glass-blowing concern in a southern county, was exhibited, and the peculiar form was explained as being an attempt to evade a law passed last year. The bill was amended so as to permit deductions for debts "voluntarily" contracted by laborers, and in that form, obviously, it might as well have been laid in the waste basket as passed. The store system is all "voluntary," and yet it is not. The workman is free not to accept labor on such conditions, just as anybody is free to travel around the globe—if he can manage it. Whether legislation ought to make the attempt, and whether it can successfully make it, to intervene and change the laborer's circumstances, is a question we are not prepared to answer affirmatively; yet the problem is either to change the employer's heart so that he will voluntarily renounce a system which multiplies his gains, or else to so arrange circumstances that the laborer shall have work for cash within his reach. The State cannot proceed indefinitely in ameliorating individual condition. The evil is far more obvious than the remedy; we only present it as one fit for the exertions of economists and all who wish to mediate between labor and capital.

Recent Experiments in Foundry Pig.

Prof. Ledebur, of the Freiberg School of Mines, well known as a careful investigator, has quite recently concluded a series of researches in various grades of foundry pig which are of direct interest to American consumers of pig iron, as they shed some additional light on the nature of a well-known brand of Scotch pig. Besides, his experiments claim attention because they permit valuable general conclusions. The chief requirements of good foundry pig are that it can be worked easily with tools when cast, that it shrinks little, fills the mold well and shows little tendency to dissolve gases. These properties are dependent upon the presence of a certain percentage of graphite, and the separation of carbon in that form is governed largely by the presence of silicon. But foundry pig possessing the requisite qualities, when subjected to smelting in a cupola or a reverberating furnace, is subject to considerable changes. The hardness is increased perceptibly, even after the first smelting, and the shrinkage, as well as the tendency to dissolve gases, is similarly affected. A glance at the fracture of the remelted pig will show that the cause of these changes is a decrease in the percentage of graphite. The iron shows a finer grain and has become lighter in color, and, if the melting is repeated, it finally grows hard, brittle and white, being thus rendered unfit for foundry purposes. The simple expedient generally adopted to overcome this difficulty in melting scrap, broken castings, sprues, &c., is to add pig rich in graphite, and such grades are, therefore, indispensable to iron founders. But, as they are more expensive than the ordinary brands, it is naturally desirable to limit the quantity used. It might be argued that, as silicon induces the separation of carbon in the graphitic state, it might prove advantageous to use pig running high in silicon, say as much as 10 per cent. Such is not the case, however, it having been found that beyond a certain limit, generally about 3 per cent., the presence of silicon diminishes the capacity of pig to absorb carbon, and that an excess of silicon acts injuriously upon the mechanical properties of cast iron, so that a percentage giving beyond 1.5 to 2 per cent., is not regarded with favor.

It is a remarkable fact that different brands of pig having the same percentage of silicon and graphite do not act alike when being remelted, some losing their graphite and deteriorating more rapidly. No reliable experiments to ascertain the cause of this anomaly have been made, and Prof. Ledebur has, aided by Herr Scheffer of Sterkrade, sought to solve the problem, starting from the idea that the best means of arriving at valid conclusions would be to melt one brand of pig several times. Three brands were tested—Coltness No. 1, Gutehoffnungshuette No. 1 and Gleiwitz pig. Coltness pig is largely used by German founders, who consider it valuable because it remains gray and soft, even after being repeatedly melted, because it shrinks little and makes tough castings of average strength. While Prof. Ledebur thus fairly and fully acknowledges its good quality, he distinctly states that, according to his experience, it does not deserve its reputation of being uniform, so far

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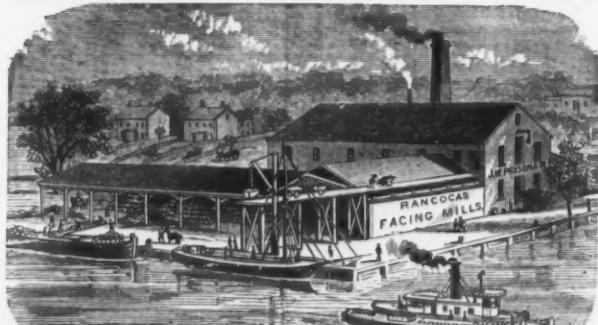
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Carbon	3.50	4.06	3.64
Silicon	3.50	2.03	4.18
Manganese	0.28	1.21	1.59
Phosphorus	0.08	0.72	0.84
Copper	0.10	0.55

It should be stated, however, that while it is not superior in this respect to many German brands, it shows greater uniformity when remelted. The following are the results of the analyses of samples of pig repeatedly melted:

COLTNESSE NO. 1.

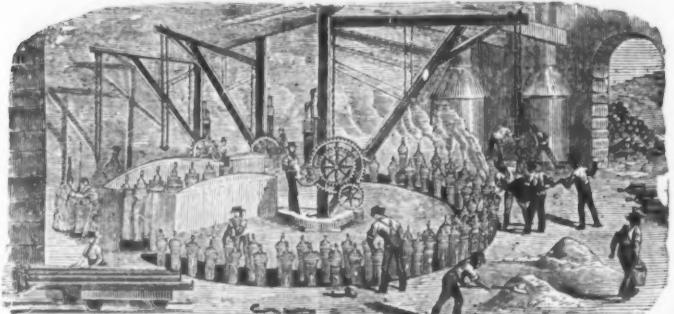
Car.	Sil.	Mang.	Cop.	Phos.
Pig	2.52	1.27	0.05	0.76
After 1st	2.406	1.122	0.034	0.76
After 2d	2.404	0.879	0.034	0.76
After 3d	2.409	2.266	0.031	0.133
After 4th	2.409	2.079	0.465	0.079

GUTEHOFFNUNGSHUETTE NO. 1.

Car.	Sil.	Mang.	Cop.	Phos.
Pig	4.164	2.056	0.079	0.611
After 1st	3.045	2.406	1.122	0.034
After 2d	3.044	2.446	0.879	0.034
After 3d	3.499	2.266	0.031	0.133
After 4th	3.499	2.079	0.465	0.079</

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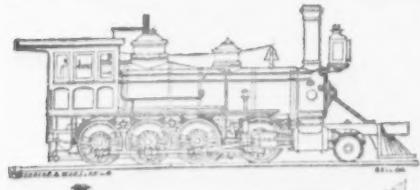
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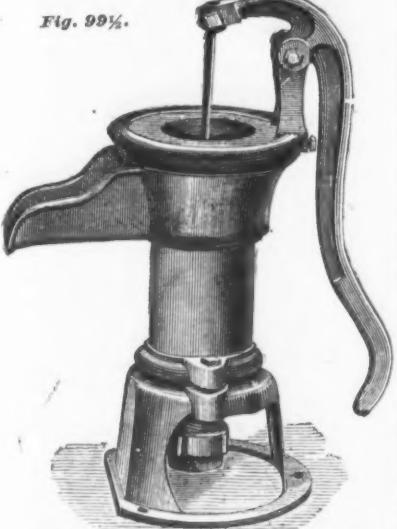
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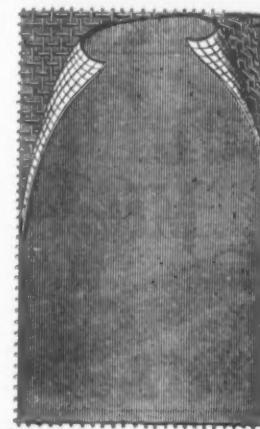
sheared edge near the point.

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wind, and also stated that there was no ground for suggesting that the bridge had been constructed of inferior materials, nor had he seen any indications of defective workmanship which would account for the accident.

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RUBBER PACKING WITH WIRE CLOTH INSERTION.

being taken with reference to prior use, prior books, publications and patents in which the defendant claimed the invention of the patent had been described.

In this case, also, the infringement was virtually conceded.

In his decision in favor of the United Nickel Company in these suits, Judge Shepley declared that in his opinion Dr. Adams was the first man to introduce nickel plating as an art into the United States, and the first and original discoverer and inventor of the improvements set forth in his letters patent.

The United Nickel Company went forth from these litigations with their patent sustained by a judicial decision from a high authority. But a careful investigation of the defenses urged, and points specifically decided, showed that the United Nickel Company had not maintained their claims to the whole art of nickel-plating. A careful observer, looking beneath the surface, would see that while the defense of anticipation was fairly complete and well urged in the latter of these suits, there had been practically no defense on the point of non-infringement, and while the Judge had declared in general terms his belief in the claim of Adams as first inventor of the art, he had not passed specifically on the construction of the fourth claim of the Adams patent, which in terms gave Adams the sole right to plate metals with nickel.

These litigations had taken place between the years 1870 and 1872. In the year 1873, the United Nickel Company began a suit against Harris & Weston, a firm of nickel-platers in the city of New York. This case was taken up by persons interested in nickel-plating, and a strong defense developed.

The position taken by defendants in this case differed essentially from the defense in the Massachusetts cases. There anticipation and prior use of the invention claimed in the patent were the only defenses strongly urged. In the Weston case, while the same defenses of anticipation and prior use were made much more exhaustive and complete, what was principally relied on by the defendants was that they had not infringed on the patent. They said, in effect, to the United Nickel Company: "You can have your patent; you can have your double sulphate and double chloride solutions, as claimed. We do not use them. What we do use are those solutions with the substances in which you keep out. Our solution is not neutral, but alkaline, and, therefore, we do not infringe." These and the other defenses were urged with great completeness, and expert testimony was taken at great length. The case was first brought to an argument in the spring of 1876, before Judge Johnson, who died without deciding it. In the spring of 1878 it was again argued before Judge Blatchford, who, in the fall of that year, rendered a decision sustaining the patent. In this decision he endorsed Judge Shepley's views, as expressed in his decision in the Anthes and Keith cases, as to Adams being the first introducer and inventor of the art of practical nickel-plating in the United States. As to the defense of non-infringement, he decided that the evidence convinced him that, while the substances potash and soda were introduced in a certain form in the Weston solution, the solution was so used as to be practically free from the substances potash and soda, while the process of nickel-plating was being carried on by the use of that solution, and, therefore, the defendants infringed.

Motions for injunction were soon after made by the United Nickel Company against Richardson, Boynton & Co., the Manhattan Brass Company and William H. Jackson & Co., of New York. These motions were argued about the 1st of December, 1878, by Mr. E. N. Dickerson for the United Nickel Company, and by Senator Conkling and Messrs. Frost & Co. for the defendants.

The arguments of these motions were virtually a reargument and rehearing of the Weston case as to the point of non-infringement, the defendants claiming that they did not use the invention of the patent. In March, 1879, Judge Blatchford granted the injunctions, and decided that the defendants had presented no new evidence on these motions to cause him to change his views as expressed in his decision of the Weston case.

Judge Blatchford in these cases definitely decided that the United Nickel Company was entitled to the sole right to plate metallic articles with a coating of nickel in a solution of the double sulphate of nickel and ammonia, or a solution of the double chloride of nickel and ammonium, as claimed. A large number of injunctions against various nickel platers and manufacturers in New York soon followed the decision of these motions, and among these injunctions was the one against Charles G. Pendleton, for the alleged violation of which the attachment for contempt was asked for in the case recently decided. Judge Blatchford decided on this motion that the well-known Gore solution was an infringement. Prior to the Pendleton case, the only solutions brought before the court had been the double sulphate and double chloride solutions, the Gore solution being included in these; but in this case the defendant was charged with violating the injunction, because he plated (as plaintiff claimed) in a solution of the double acetate of nickel and ammonia. This solution, plaintiff claimed, was a mere substitute for the double sulphate solution, for the reason that it was a neutral solution free from an acid or alkaline reaction.

4. The electro-plating of metals with a coating of compact, coherent, tenacious and flexible nickel of sufficient thickness to protect the metal upon which the deposit is made from the action of corrosive agents, with which the article may be brought in contact.

This patent, in the fall of 1870, was sold by Mr. Adams to the United Nickel Company, a corporation organized in the year 1860, under the laws of the State of New York.

Litigation on the patent commenced soon after. The first two cases were those of United Nickel Company against Anthes and United Nickel Company against Keith, before Judge Shepley, in Massachusetts.

In the former of these cases the alleged infringement was admitted, and the defense was put solely on the ground that the solution and claims of the patent were old, the defendant claiming that the solutions had been previously described in publications and patents, and that nickel plating had been used prior to the Adams patent by various persons in this country. This defense in the Anthes case was by no means complete, and only a few witnesses were urged and a few witnesses examined.

The judicial decisions, so far as regard this patent, may be summed up by saying that they sustained the United Nickel Company in their right to all double sulphate and chloride solutions, leaving nickel platers free to use all other solutions that they may be able to prove do not infringe the Adams patent for neutral solutions.

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All sorts of Hardware and Merchandise for Import and Export purchased on commission.

HEADQUARTERS FOR

ELEY BROS. GOODS, WRIGHT'S ANVILS,

WILSON'S BUTCHER KNIVES, &c.

WOSTENHOLM'S POCKET CUTLERY AND RAZORS,

BUTCHER'S FILES, TOOLS AND RAZORS,

STUBS' FILES, WESTERN FILES,

GREAVES' SHEEP SHEARS,

CHESTERMAN'S TAPES,

GERMAN COIL AND HALTERS and other CHAINS,

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WOSTENHOL

THE WM. ROGERS MFG. CO., MANUFACTURERS OF Superior Electro Silver-Plated Table Ware'



WM. ROGERS,
Senior Member and Manager of ROGERS BROTHERS.
On Knives.



F. WILLSON ROGERS,
Son of the late Wm. Rogers.
On Spoons.



Our KNIVES are guaranteed to STRIP
12 dwt. of SILVER per Dozen.
All goods are put up ONE DOZEN IN A BOX.
All our KNIVES are put up in the latest
and most attractive style, with guarantee
card in every box.

OUR GOODS ARE PLATED 20 PER CENT. ABOVE STANDARD PLATE.

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HALL, ELTON & CO.,

Electro Plated Ware, German Silver and Britannia Spoons.



THE "EASTLAKE." (Patented.)

Factories, Wallingford, Conn.

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FORKS, SPOONS, Etc.,

Manufactured from Cast Steel, Plated with Nickel and Silver.

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THE HOWE SCALE CO., Improved Scales & Weighing Machines of every Variety.

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Four Pointed Steel Barbed Cable Fence Wire,

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Represented in New York by GEORGE L. SQUIER & BRO., 195 Water St. (See Monthly Iron Age.)

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MANUFACTURERS OF

Finest Quality Silver-Plated Spoons, Forks, Knives, &c.

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NOTICE.—We guarantee the base of our Spoons, Forks, &c., to be full 12 per cent. Nickel Silver, and extra heavily plated with pure Silver. Our goods are all hand burnished, and are first-class in every respect. We pack our Spoons and Forks one dozen in each box.

49 CHAMBERS ST., { Factories,
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Iron and Brass Wood Screws.

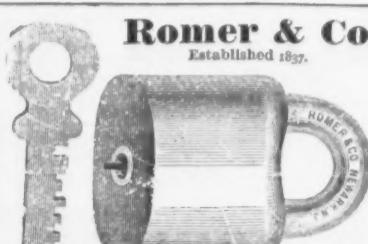
We manufacture a full line of

IRON AND BRASS SCREWS.

Quality, finish and tests as to strength, guaranteed equal to any in the market.

With improved facilities and largely increased capacity for production, we can fill orders promptly, and invite inquiries for discounts.

Philadelphia Screw Co., Limited,
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Established 1837.

Manufacturers of Patent Scandinavian or Jail Locks. Brass Pad Locks for Railroads and Switches. Also Patent Stationary R. R. Car Door Locks. Patent Piano and Sewing Machine Locks.
1 to 145 Railroad Avenue, NEWARK, N. J.
Illustrated Catalogue sent to the trade on application.

INDUSTRIAL ITEMS.

NJERSEY.

The National Iron Works, of New Brunswick, have been compelled to greatly increase their force, in consequence of large orders for machinery used in the manufacture of India rubber goods. They are also quite busy in the manufacture of their National steam pump.

PENNSYLVANIA.

The Pottstown Iron Company are putting the electric light into the stock, cast and engine house of their furnace.

The Monocacy Furnace turned out 200 tons for the week ending the 10th inst.

The Rockland Furnace, Old Sally Ann, recently purchased and put in blast by the Rockland Furnace Company, is making 40 tons of charcoal iron a week. The company expect shortly to increase the production to 60 tons.

On the morning of Monday, the 19th inst., the main building of the Western File Co.'s works at Beaver Falls was completely destroyed by fire. The loss is estimated at \$300,000, \$125,000 of this being covered by insurance. The work of rebuilding has been commenced.

Stack No. 1, of the Crane Iron Company, Catasauqua, went out of blast on the night of the 18th inst., and will never be put in blast again. This stack was put in blast on the 4th of July, 1840, and was the first furnace in the Lehigh Valley that successfully made iron with anthracite coal. The stack will be torn down and replaced by one having the latest improvements. Stack No. 3 will probably be ready for blast by July.

The new engine of the Mt. Hickory Iron Company has been tested, and is reported to have worked admirably. It is a massive piece of machinery, weighing about 75 tons. The size of the steam cylinder is 36 x 48 inches; blowing cylinder, 48 x 84 inches. It is said to be the largest upright engine in the valley.

The Hollidaysburg Furnace is producing from 140 to 150 tons per week.

It is stated that the Duncansville Rolling Mill has shut down for an indefinite period.

The Glen Rolling Mill, situated near the Lehigh Valley depot, Allentown, started work last week, and have all the furnaces in blast with the exception of one. About 100 men are employed. It has been lying idle for several years, and owing to its dilapidated condition, a great amount of repairing was necessary to render it fit for use.

There is talk that a bottle-glass factory will soon be started in Bloomsburg.

The Pennsylvania Steel Company's rail mill turned out, on the night shift of the 8th inst., 936 finished steel rails, the total length of which was five miles 52 yards. This product was turned out in 12 hours, the aggregate weight being 208½ tons.

Messrs. Eugene Bordia, Ethelbert Watts and John Mariett, of Vesta Iron Furnace of Marietta, have been actively engaged for the past three months looking for an eligible site for the erection of a blast furnace at tide-water. They have decided upon South Chester as the most desirable point, and now have the option from the Reading Railroad of buying what land they may require adjoining Marcus Hook. It is proposed to start with a capital of \$300,000, of which one-half has already been subscribed.

The Philadelphia Bridge Works of Coffrode & Taylor have orders amounting to 6000 linear feet of iron bridge, in 60 spans. Among these orders is one of 12 spans for the Texas Pacific Railroad; and another for two railroad bridges and two turntables for Japan. One hundred and seventy-five men are employed at their shops at Pottstown.

It is reported that the managers of the Reading Hardware Company are considering the advisability of removing their foundry and machine shops from Reading to Robesonia, Berks County.

Nine different veins of iron ore have been recently opened on land near Macungie, ranging in thickness from 5 to 15 feet. Analysis of the ore, it is claimed, shows that it contains 56 per cent. of pure iron.

Some weeks ago the Missouri Furnace Company brought suit in the United States Circuit for damages against Boyle & Hazlett, of Fayette County, coke manufacturers, claiming \$100,000 damages for failure to fill a contract for delivery of coke. We do not know the particulars, but are informed that a compromise has been effected by the payment to the furnace company of \$12,000.

PITTSBURGH AND VICINITY.

Lewis, Oliver & Phillips' wire mill is now lit by the Brush electric light.

Wm. Smith & Sons, iron founders, of this city, recently shipped two of their new furnaces, for manufacturing gas from petroleum, to Sacramento, Cal. They also shipped one to Chicago for the purpose of lighting up the C. R. I. & P. R. R. shops, and some time ago shipped furnaces to Australia and New Zealand.

H. K. Porter & Co. have just shipped their first locomotive to Japan, and another will follow in a few days. These are the first locomotives sent from the United States to Asia.

The Iron City Bridge Company has been notified that, in connection with the Union Foundry Co., of Chicago, they had received the contract for furnishing the ironwork to be used in the construction of the new Union Depot, to be built in Chicago. This depot will be for the use of the Pittsburgh, Fort Wayne and Chicago Railroad, Chicago and Alton, and Milwaukee and St. Paul roads.

Pittsburgh councils have awarded to Jas. Marshall & Co. the contract for furnishing the city with cast-iron water pipe, as follows: Straight pipe, \$58 per ton of 2000 pounds; special castings, \$78.50 per ton.

It is probable that the Masillon, Ohio, Bridge Co. will receive the contract for building five county bridges in Allegheny County. The entire length of the superstructures of the bridges is estimated at 438½ feet, and the cost, \$8895. They will be built of iron.

It is reported that the Phoenix Glass Works are to be removed to Phillipsburg, Beaver County.

Among the business returns of All-Phenix

City filed in the controller's office last week, are the following: DeHaven & Co., foundry, \$5000; Koehler Bros., scrap iron, \$66,758; Legget Spring and Axle Co., \$130,053; Smith, Sutton & Co., steel, \$385,273; Pittsburgh Iron Paint Co., \$15,000.

It is expected that about 4,000,000 bushels of coal will leave Pittsburgh for points down the river on the present rise.

The greatest daily output yet attained by the new 20-foot Edgar Thomson "B" Furnace is 143 tons. This output is better than the Lucy Furnace has ever made.

MARYLAND.

The Warren Glass Works Co. is a new concern lately organized. They are erecting works at Cumberland for the manufacture of lead and flint glass blown hollow-ware, and will be fully in operation next fall. They start with one eight-pot furnace. The building will be a one-story frame, 160 feet long, 60 feet wide and 35 feet in height.

OHIO.

The Western Lock Company, Geneva, employ 100 hands in the manufacture of fine cabinet locks. They are very busy, being crowded with orders.

We learn that it is proposed to erect a very extensive furnace plant on what is known as the Herold property, opposite Floodwood Station, on the Columbus and Hocking Valley Railroad. It will consist of two stacks, 17 x 60, and the preliminaries are being arranged to complete the work during the season. The work is understood to be the enterprise of Eastern iron manufacturers, who have associated themselves with Mr. W. D. Lee, of Newark. Col. Isaac B. Riley, who became identified with the mineral interests of that section while chief engineer of the Newark, Somerset and Straitsville Railroad, will, it is said, have general charge of the construction.

Nearly 3000 acres of land have been purchased by the company, all of which is underlaid by the "great" coal seam, and on which it is believed there is an abundance of ore. Other new furnaces are being talked of in the district. The outlook for the Hocking Valley in 1880 is certainly of a most encouraging character.

The Lowellville Furnace of the Ohio Iron and Steel Company is now in blast.

Grant Furnace fired up on the 22d inst., and was to have put on the blast on the 26th. She went out in the latter part of last month, and will make warm-blast car-wheel iron on this blast.

The old Leetonia nail mill has been dismantled, all the machines having been sold.

A telegram dated Steubenville, April 22, says that the Mingo Iron Works shut down on that day for an indefinite time. They had just completed relining one of their furnaces, but, owing to the limited demand for iron, decided to close the entire works for the present.

Brown, Bonnell & Co., Youngstown, are running their nail factory to its fullest capacity. They are extending the factory, are putting in a number of nail machines purchased from the old Leetonia factory, and have nearly completed a large heating furnace.

It is stated that another glass factory project is on foot at Martin's Ferry, to which the citizens of the place are said to be subscribing liberally.

The new furnace of the Mahoning Valley Iron Company is being pushed forward with great rapidity. It is anticipated that the fires will be lighted on May 1.

The Jefferson Iron Works, Steubenville, is stopped for repairs. They are putting in a new battery of boilers.

KENTUCKY.

Clear Creek Furnace, Bath County, has now 3000 cords of wood cut, and will be ready to commence making iron about the 1st of July.

It is expected the Estill Furnace will be put in blast about the 1st of May. This furnace was built in 1831.

ALABAMA.

The large mill of the Birmingham Rolling Mill Company is rapidly nearing completion, with very good prospects of commencing work by the latter part of June.

Ground has been broken at the site of the two new furnaces which the Eureka Iron Co. propose to build, near Birmingham.

Birmingham is talking of erecting a large nail factory.

The Southern Iron Ore and Mining Co. report a contract of 5000 tons of brown hematite for the Pittsburgh (Pa.) district. It is understood that they have very favorable rates for transportation of the same.

MICHIGAN.

The old Chocolay Furnace, near Marquette, which is owned by the Northern Iron Company, is to be put in blast as soon as some necessary repairs to the stack can be made. The furnace is one of the first built on the upper peninsula, but, owing to mismanagement and financial difficulties, went out of blast soon after starting up, and has been idle ever since.

MISSOURI.

Kings and Ferguson & Co. expect to have their new foundry completed and put into operation within 30 days.

The Curtiss Stove Company are unusually busy for this season of the year. They are now melting about 75 tons of pig iron per month.

TENNESSEE.

There was a meeting of the stockholders of the Roane Iron Company, at their Office in Chattanooga, on the 23d inst. The old directory was retained. On account of failing health, Hon. W. P. Rathburn, who has been president of the company nearly ever since its organization, tendered his resignation, which was reluctantly accepted. Capt. H. S. Chamberlain, for many years the vice-president and general manager, was chosen to fill the vacancy. H. Clay Evans, the late secretary, was made vice-president and general manager, and S. B. Strong was elected assistant manager. All three of these gentlemen have been connected with these large works most of the time since they went into the hands of the present company.

They have actively supervised the enlargements and improvements, the building and operating of the steel rail plant, &c.

H. D. SMITH & CO., Plantsville, Conn.,

Manufacturers of the

BEST QUALITY CARRIAGE MAKERS' HARDWARE.

Manufacture the Largest Variety of Forged Carriage Irons of Best Material and Workmanship.

PRICES LOW FOR QUALITY OF WORK FURNISHED.

SEND FOR PRICE LIST.

SARANAC HORSE NAIL CO. Polished or Blued Horse Nails, Hammered and Finished.

The Saranac Nails are hammered hot and the finishing and pointing are done cold. Quality is fully guaranteed. For sale by all leading iron and hardware houses.

S. P. BOWEN, President and Treasurer.

J. W. LYNDE, Secretary.

PLATTSBURG, N. Y.

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AGENTS FOR
W. & C. Scott & Son's,
J. P. Clabrough & Bros'
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BREECH LOADING GUNS.



COLT'S
PARKER'S and
REMINGTON'S
BREECH LOADING GUNS.

HARTLEY & GRAHAM,

Post Office Box 1760.

NEW YORK.

17 and 19 Maiden Lane.

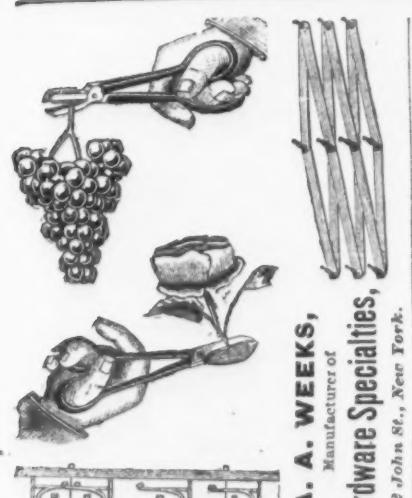
Importers and Jobbers,
AMERICAN BREECH LOADING
ENGLISH " "
BELGIAN " "

GUNS

CHEAPEST AND BEST GRADES.
ENGLISH MUZZLE LOADING
BELGIAN " "
FLOBERT RIFLES, Plain and Remington System.

BRITISH BULL DOG REVOLVERS, 38, 44 and 45 Calibre.

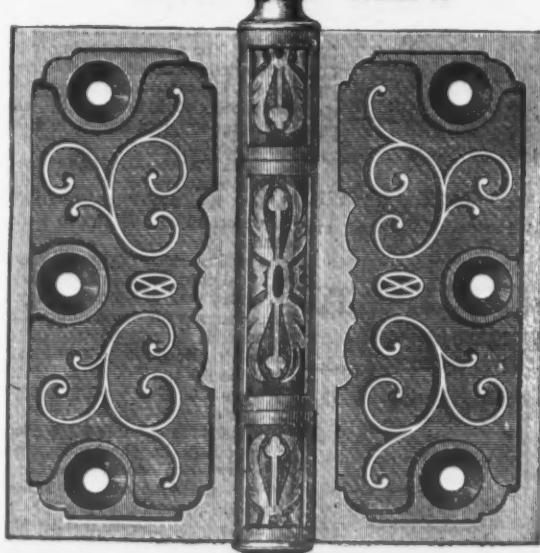
Agents for COLT'S and ROBIN HOOD line of REVOLVERS, BRIDGEPORT GUN IMPLEMENT CO.'S GOODS, UNION METALLIC CARTRIDGE CO.



THE CLARK

Successors to
MANUFAC-

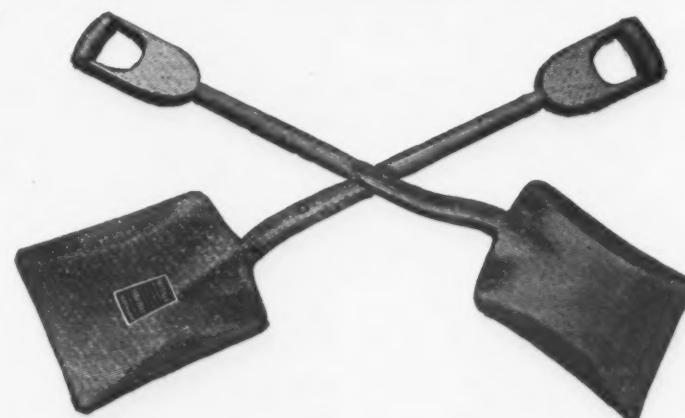
CLARK & CO.,
TURERS OF



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BUILDERS' HARDWARE,
BUFFALO, NEW YORK.

HUSSEY, BINNS & CO.,



PITTSBURGH.

**SHOVELS,
SPADES and
SCOOPS.**

A. WYCKOFF,
Manufacturer of
Wyckoff Patent Wood Water Pipe,
Steam Pipe Casing,
Chain Pump Tube, Curbs, Reels, Rubber
Valves, Chain, &c.
Established 1844. Send for pamphlet.
ELMIRA, N. Y.

PROVIDENCE TOOL CO.

Providence, New York, Boston, Chicago.

**Wrist & Ankle Shackles,****REVERSIBLE****ICE AND FLOOR SCRAPERS,**

MADE BY

PROVIDENCE TOOL CO.,

Providence, R. I.

The advantage of this Scraper is that each cutting edge can be changed as fast as worn, and present a new and sharp-cutting edge. Thus the Scraper can be all used, and the whole blade made available. It is especially useful in cleaning ice from sidewalks. Price, \$9 per doz.



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105 Chambers St.,
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FRANKLIN S. MILES,
Manufacturers of
SCREWS,
205 Quarry Street, Philadelphia.

N. Y. MALLET and HANDLE WORKS

Manufacturers of
Calkers', Carpenters', Stone Cutters'
Tin, Copper and Boiler Makers'
MALLETS,

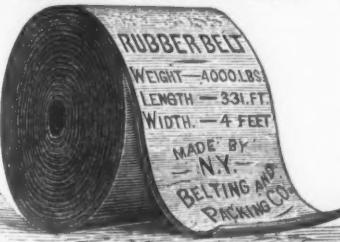
Hawsing Beetles, Hawsing and Calking Irons :
all kinds of Handles, Sledge, Chisel and Hammer Handles. Also

COTTON AND BALE HOOKS,
Patented Feb. 13, 1877; a new combination of Hooks.
456 E. Houston St., New York City.

THE FAR-FAMED
AMERICAN LUBRICATOR.
AMERICAN LUBRICATOR CO.
DETROIT, MICH. U.S.A.

Vulcanized Rubber Fabrics**ADAPTED TO
MECHANICAL PURPOSES.****RUBBER BELTING and PACKING.**

Machine Belting,
Steam Packing,
Leading Hose,
Suction Hose,
Grain Elevator
Belting,
Steam Hose,
Piston-Rod
Packing,
Gaskets and Rings.



This company manufactured the immense DRIVING and ELEVATOR BELTS for the Buckingham Elevators at Chicago, which have been running perfectly for more than Twelve Years, also those for Arrowsmith's Coal Colic, and the Vulcanized Belts for elevators in New York Central and Hudson River, New York, being the Largest Belts in the World. We are now making an Elevator Belt, 36 inches wide and 200 feet in length, which will weigh over 18,000 pounds.

LINEN and COTTON HOSE,

Pat. 654c.

Plain and Rubber Lined. Circular Woven-Seamless Antiseptic RUBBER LINED "CABLE" HOSE and "TEST" HOSE, Vulcanized Para Rubber and Carbonized Duck, for the use of Steam and Hand Fire Engines, Force Pumps, Mills, Factories, Steamers, Ships, Hospitals, &c.

"TEST" HOSE. "CABLE" ANTISEPTIC.

Emery Wheels and Packing.

Patented.

**ORIGINAL
Solid Vulcanite
EMERY WHEELS**

LARGE WHEELS MADE ON CAST-IRON CENTER IF DESIRED.

The properties of these Wheels are such that they can be used with great advantage and economy for cutting, grinding, and finishing Wrought and Cast Iron, Hardened Steel, Slate, Marble, Glass, etc. These Wheels are extensively used by manufacturers of Hardware, Cutlery, Edge Tools, Plows, Safes, Stoves, Fire Arms, Wagon Springs, Axles, Skates, Agricultural Implements, and small Machinery of almost every description.

PATENT ELASTIC

Rubber Back Square Packing

BEST IN THE WORLD.

For Packing the Piston Rods & Valve Seats of Steam Engines & Pumps.

B represents that part of the packing which, when in use, is in contact with the Piston rod.

A the elastic back, which keeps the part B against the rod with sufficient pressure to be steam tight, and yet creates but little friction.

This Packing is made in lengths of about 20 feet, and of all sizes from $\frac{1}{4}$ to 2 inches square.**Corrugated Rubber Mats and Matting,**

Pat. Jan. 26, 1869.

For Halls, Flooring, Stone and Iron Stairways, &c.

RUBBER MAT

RUBBER MATTING.

inferior quality forced on the public by reckless imitators of our patent goods soon becomes brittle and crumbles to pieces. Address

NEW YORK BELTING & PACKING CO.,

Warehouse, 37 and 38 Park Row, New York.

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CHALFANT MFG. CO.,

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435 Arch St., Philadelphia.

Owners and Manufacturers of the

Celebrated Patent Gas Heating Smoothing Iron.

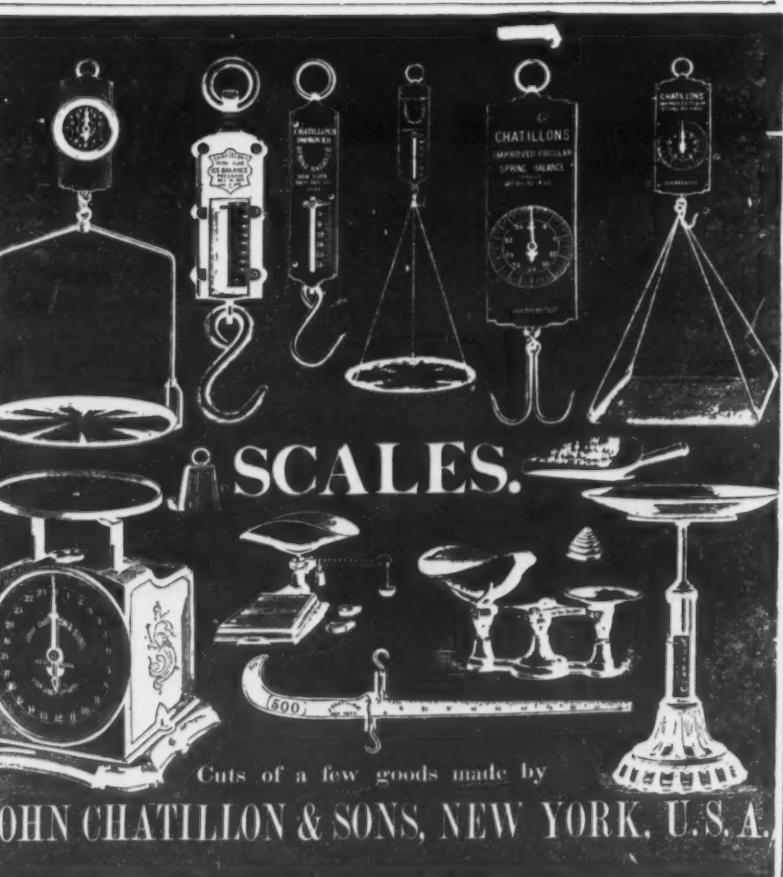
Can be heated on any ordinary gas burner in three minutes. People who have to board cannot get along without them.

Also manufacturers of the

Improved Troy Polishing Iron

for laundry purposes. For sale by Hardware and Housefurnishing dealers.

Liberal discount to the trade.



Cuts of a few goods made by

JOHN CHATILLON & SONS, NEW YORK, U.S.A.

Trade-Mark Decisions.

We are indebted to Mr. Francis Forbes, secretary of the United States Trade-Mark Association, for the following synopsis of all the reported decisions which have been rendered in the courts of this country, with the exception of those of New York, on questions affecting trade-marks:

§ 1. *California.*—It was held in Woodward vs. Lazar (21 Cal., 448, 1863), that the name of a hotel is a trade-mark in which the proprietor has a valuable interest, which a court of chancery will protect. A tenant giving a particular name to a building, as a sign of the hotel business, for which he uses it, does not thereby make the name a fixture of the building and the property of the landlord upon the expiration of the lease.

In Derringer vs. Plate (29 Cal., 292, 1865), that the right of property in a trade-mark is recognized by the common law, and is not limited by territorial bounds. The California statute of 1863, concerning trade-marks, does not take away from those who do not register their trade-mark according to its provisions their common law remedy.

In Falkenburg vs. Lucy (35 Cal., 52, 1868), that by the terms "peculiar name, letters, marks, devices, figures, or other trade-mark or name," as used in the statute concerning trade-marks (Hitel's Laws, Art. 7134), is not meant the established and proper names by which the "articles" to which they are attached and by which they are known in the market, nor something indicating their actual kind or quality, but something new—not before in use—intrinsically foreign to the "articles" themselves, and which only serve to designate them because it has been fancifully put to that use, in disregard of all natural relations. In this case, plaintiff's alleged trade-mark consisted of a highly colored picture of a wash room, &c., with the following legend interblended with it: "Standard Soap Company, Erasive Washing Powder," followed by directions for the use of the "washing powder," and the place of manufacture. The alleged imitation consisted of a label (with picture) which was the same as the plaintiff's only in the use of the words "washing powder," the directions for the use of the powder and the color of the paper. Injunction, in court below, restraining defendant from the use of his label, was dissolved.

In Choynski vs. Cohen (39 Cal., 501, 1870), it was decided that "Antiquarian Book Store" is descriptive, and therefore not a trade-mark.

In Graham vs. Plate (40 Cal., 593, 1871), that the profits realized by defendant from sales of the spurious article under the stimulated trade-mark, is a proper measure of damages, but the recovery of the plaintiff is not limited to the amount of such profits.

Burke vs. Cassen (45 Cal., 467, 1873), was an action brought to restrain defendants whose label read as follows: "Van Wolf's Aromatic Schiedam Schnapps. A superior tonic, anti-dyspeptic and invigorating cordial. This wholesome beverage," &c. Plaintiff's label read: "Wolfe's Aromatic Schiedam Schnapps. A superlative tonic, diuretic, anti-dyspeptic and invigorating cordial. This medicinal beverage," &c. The description in either case was slightly different. Because the words "Aromatic Schiedam Schnapps" were merely descriptive of the article, (Schnapps meaning gin and Schiedam being the name of the place where manufactured,) an injunction was only granted against the use of the name "Wolfe" or "Van Wolfe," or any colorable imitation of the name Wolfe, or plaintiff's label.

The Court said that a label at common law is not a trade-mark, but when a manufacturer or seller of goods adopts a label to distinguish his goods from those of another, he is entitled to be protected in its use, and others will be enjoined from using the same or a colorable imitation thereof.

§ 2. *Connecticut.*—In Bradley vs. Norton (33 Conn., 157, 1865), it was decided that the exclusive right to a trade-mark is a species of property recognized by law.

The imitation of a trade-mark, which will constitute an infringement of this right, need not be a precise copy of the original; if there is a substantial similarity, so that the community would be likely to be deceived, it is sufficient. In Boardman vs. Meriden Britannia Co. (33 Conn., 402, 1868), the defendants used labels similar in arrangement to those of plaintiff, but substituted their own names for that of plaintiff. Thus, "1-2 Gross L. Boardman's No. 2340 Wire Strengthened, French Tipped Tea Spoons." "1-2 Gross Meriden Britannia Co.'s No. 2340 Wire Strengthened, French Tipped Tea Spoons." The principal feature of the label (not in size of type) was the numerals designating the kind of spoon contained in the package. Defendants were enjoined. The decree in this case was the subject of review. 36 Conn., 207, 1869. In Holmes, Booth & Atwood Mfg. Co. (37 Conn., 278, 1870), it was held that when the name of a manufacturing corporation designates the origin and ownership of goods manufactured by it, it will be protected in the use of its name to the same extent and upon the same principle that individuals will be protected in the use of trade-marks. Defendant corporation was enjoined against the use of its name.

Meriden Britannia Co. vs. Parker (39 Conn., 450, 1872). The plaintiffs had in their employ three brothers by the name of Rogers, who had formerly, from 1847, manufactured spoons on their own account and stamped them "Rogers." They entered the plaintiffs' employment and stamped spoons "1847, Rogers Bros., A. I." Defendant acquired the right from other brothers named Rogers, not in his employ, to stamp their name on spoons. He stamped his spoons "C. Rogers Bros., A. I." and "C. Rogers & Bros., A. I." and was enjoined. The court declined to enjoin the name "Rogers" when used alone.

§ 3. *Georgia.*—In Ellis vs. Zelin (42 Ga., 91, 1871), the plaintiff claiming proprietorship of a medicinal preparation, "Dr. Simon's Liver Regulator or Medicine," filed a bill against defendants, alleging that they sold a preparation called "Simon's Genuine Liver Medicine," put up in packages similar in form and size to his, to take advantage of the reputation of his medicine. Defendants demurred, thus admitting the allegations of the bill to be true. Their demurrer was overruled

and an injunction directed to issue. On appeal, judgment affirmed. The court say:

"In matters of trade-mark we lay down the rule to be, that, in order to authorize the interposition of a court of equity, the title to the use and enjoyment must be clear and unquestionable, and will be adjudicated only upon the rights of parties before the court and as between their conflicting claims, and not with a view to the guardianship of the public upon the merits or demerits of nos- trums, except in cases where injury to the public health or morals enters into the ingredients of the allegations."

§ 4. *Illinois.*—Candee vs. Deere. (54 Ill., 439, 1870.) The plaintiffs were manufacturers of plows at Moline, Ill., and claimed as their trade-mark the words "Moline Plow," which they used in their circulars, price lists and advertisements, but did not place upon the articles manufactured. Defendants made the same use of these words. It was held that "Moline Plow" did not become plaintiff's trade-mark, because not affixed to the articles manufactured, and because the words were a generic term indicating the place at which the plows were made.

The plaintiffs stenciled on their plow beams the words "John Deere" in large heavy capitals in the segment of a circle, and the words "Moline, Ill." in a straight, horizontal line underneath, in smaller capitals. Defendants stenciled the words "Candee, Swan & Co." in smaller capital letters on a segment of a circle, at least 2 inches longer than that of "John Deere," and the address "Moline, Ill." in still smaller capital letters, on a straight, horizontal line underneath. Held that while there was some resemblance between these brands, there was no such similarity as would show that "Candee, Swan & Co." intended thereby to sell their plows as plows manufactured by "John Deere."

§ 5. *Indiana.*—Sohl vs. Geisendorf (1 Wilson's Sup. Ct., 60, 1871.) Plaintiffs purchased a trade-mark, mark or label for flour in this form: "White Rose Mills, "Snowflake," "Sohl, Wild & Co." They substituted their own firm name of "Sohl, Gibson & Co." Held that their title to whole mark or label was good. It is an infringement of a trade-mark, even though the imitation and original, when placed side by side, would not mislead, if the similarity is such that a difference would not be noticed when seen at different times or places.

§ 6. *Kentucky.*—Laird vs. Wilder (9 Bush, 131, 1872). Defendant unreasonably adopted, to mislead the public, the design of the bottle and the label of plaintiff's preparation. The imitation was so nearly exact as to be well calculated to produce the desired effect. The plaintiff put his compound upon the market with the express, as well as implied, assurance that it was "free from all mineral and poisonous substances." The evidence showed that it contained poisonous substances. Injunction refused. Harden, J.

In Graham vs. Plate (40 Cal., 593, 1871), that the profits realized by defendant from sales of the spurious article under the stimulated trade-mark, is a proper measure of damages, but the recovery of the plaintiff is not limited to the amount of such profits.

Burke vs. Cassen (45 Cal., 467, 1873), was an action brought to restrain defendants whose label read as follows: "Van Wolf's Aromatic Schiedam Schnapps. A superior tonic, anti-dyspeptic and invigorating cordial. This wholesome beverage," &c. Plaintiff's label read: "Wolfe's Aromatic Schiedam Schnapps." Defendants' labels were colorable imitations of those of plaintiff. The court said: "To a party thus presenting himself, a court of equity, adhering to the maxim that 'he who asks equity must come with pure hands,' will not lend its aid when the object to be effected is to secure him the exclusive privilege of deceiving the public in a particular way, although, in doing so, it might prevent another equally guilty from committing the same wrong."

§ 7. *Louisiana.*—Wolfe vs. Barnett & Lyon (24 A., 97, 1872). Plaintiff claimed as a trade-mark—"Wolfe's Aromatic Schiedam Schnapps." Defendants' labels were colorable imitations of those of plaintiff. The court said: "It is in vain to urge that the several words of plaintiff's trade-mark are not new. His combination of the words was new, and indicates the origin and ownership of the liquor, and the defendants have no right to filch this combination, or any important part of it, in such a way as to mislead the purchaser as to the real origin and ownership." Defendants had used their labels for ten years. Held, no defense. Injunction. Damages.

§ 8. *Maryland.*—Stonebraker vs. Stonebraker (33 Md., 252, 1870). Brent, J., said in this case: "While a party has the right to manufacture and sell any article he may please, not protected by letters patent granted to another, he has no right to use the trade-marks or names previously adopted and used by another trader, and induce thereby the public to believe the articles sold are another manufacture. Trade-marks are property, and as such the title to them will receive the protection of the courts. If used by another without the authority or sanction of the owner, he will be restrained by injunction, and that even when it does not happen that there was any fraudulent intent in their use. He will also be held to account for the profits derived from the unauthorized use of such trademarks." Plaintiff's marks were: "Stonebraker's Nerve and Bone Liniment," &c. The defense was interposed that plaintiff had assumed, without warrant, the title of Doctor of Medicine, and thereby deceived the public, who had bought his medicines supposing him to be a doctor. This was overruled, as also the defense that defendant Stonebraker had the right to use his own name. The bill alleged that defendants had employed defendant Stonebraker for no other reason than that his name was Stonebraker. The Court said that "Dr. Stonebraker had a right to enter into an agreement with Messrs. Passano & Clothworthy (co-defendants), or anybody else, to manufacture and sell his own medicines, but he had no right to lend or sell his name to perpetrate an injury upon his brother and a fraud upon the public. The evidence shows that the whole agreement between the parties was but a combination to deceive the public."

In Withaus vs. Mattfeldt (44 Md., 303, 1875), the Court said: "The mere sale of a trade mark, apart from the article to which it is affixed, confers no right of ownership, because no one can claim the right to sell his goods as goods manufactured by another. To permit this to be done would be a fraud upon the public. But when the trade-mark is assigned to the person who manufactured the tobacco to which the trade-mark was affixed, there is no false representation to the public, because the tobacco is still manufactured at the same place, and by the same person." To justify the issue of an injunction the title of plaintiff should be clear.

(To be continued.)

The Iron Age

AND

Metallurgical Review.

New York, Thursday, April 29, 1880.

DAVID WILLIAMS - - - Publisher and Proprietor.
JAMES C. EAYLES - - - Editor.
JOHN S. KING - - - Business Manager.

RATES OF SUBSCRIPTION INCLUDING POSTAGE.

THE UNITED STATES, BRITISH AMERICA AND SANDWICH ISLANDS.

Weekly Edition \$4.50 a year.
Issued every THURSDAY morning.
Semi-Monthly Edition \$2.30 a year.
Issued the FIRST and THIRD THURSDAY of every month.
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In any part of the world may obtain *The Iron Age* through the American News Company, New York, U. S. A.; the Wilmer & Rogers News Company, New York, U. S. A., and London, England; or the San Francisco News Co., San Francisco, California, U. S. A.

RATES OF ADVERTISING.

One square (12 lines, one inch), one insertion, \$2.50; one month, \$7.50; three months, \$15.00; six months, \$30.00; one year, \$40.00; payable in advance.

DAVID WILLIAMS, Publisher,
83 Beale Street, New York.

PITTSBURGH.....77 Fourth Avenue
JOE D. WEEKS, Manager and Associate Editor.

PHILADELPHIA.....220 South Fourth Street
THOR. HOBSON, Manager.

CINCINNATI.....Builders' Exchange
T. T. Moore, Manager.

CHATTANOOGA.....Eighth and Market Streets
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The publishers of "The Ironmonger," 44 Cannon street, London, England, will receive orders for subscriptions and advertisements on our regular terms.

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Engineering, of London, in an editorial comment on the trade-revival check in that country, says: "Though prices have advanced rapidly in the United States, yet the advance has not been in proportion to that known in this country, and the margin between the prices there and here is lessened, and with it also the profits of those who have imported British iron into the United States." This will be interesting reading to those who think the advance in iron in this country has been out of all character and without parallel, and is at an end. The English market has not only advanced more rapidly, but in merchant iron it has not declined as ours has, as witness our quotations of best Staffordshire bars for the past four months. Since the advance chronicled in our cable dispatch about the middle of December to £9, the quotations have not changed, and even under the decline of our market and the weakness that has been manifest for the past six weeks, their market has maintained its price. Engineering further remarks, in regard to

its own market: "It is not likely that we shall see a much greater fall in the prices of iron here, for the cost of producing is likely to rise under the increased wages the sliding scales may be expected to give, and with the approach of summer exports, already very large, may be expected to rise further." If these views are correct, we have not seen the last of the surprises in store for the iron trade here. As we said last week, it may be that the "black eye" which iron has received does not indicate as much of a blow as the appearance of the contusion would suggest at first sight. But be the eye of iron more or less black, there is "no speculation in it."

English Iron and the American Market.

MIDDLESBORO'-ON-Tees, April 12, 1880.

To the Editor of *The Iron Age*.—DEAR SIR: Many surprises have occurred to manufacturers of iron in times gone by, but I venture to think there has never been one more remarkable than the sudden demands America made on the Continent of Europe in August and September last, and which have continued ever since.

In August, 1879, the exports from Great Britain of pig iron, old iron and manufactured iron and steel, exclusive of tin plates, amounted to 39,064 tons, whereas the total exports to America in 1876 were 50,717 tons; in 1877, 51,801 tons, and 1878, 42,504 tons.

EXPORTS TO UNITED STATES

	Tons.
September, 1879.	50,629
October, 1879.	13,507
November, 1879.	39,597
December, 1879.	110,821
January, 1880.	112,322
February, 1880.	127,129
March, 1880.	187,375

Total for 7 months, exclusive of tin plates.....867,814

The United States have also imported large quantities of iron, chiefly in the form of rails, old rails, steel blooms and bars from Europe, whereas more than half the imports from Great Britain have been in the form of pig iron.

These exports from England are still going on, and it is highly probable that the April total, though it will not be so high as March, will exceed any other month.

These heavy importations are producing their natural effect in America, and prices are coming down; prices, too, have fallen and are falling still in Great Britain, because the Americans, thinking that prices may still further recede, are holding off buying for their autumn requirements.

Now, of the 867,814 tons exported in the last seven months, no less than 464,914 tons have been pig iron, and it is to be presumed that the greater part of this iron has gone into consumption.

The exports of pig iron in March reached 106,302 tons, a quantity in excess of actual requirements; but the question which is of very great interest to the Americans and ourselves is, how much in excess?

In March, stocks of iron decreased in Scotland, in Cleveland, in Wales, in Staffordshire and in the Bessemer districts of Cumberland and Lancashire. At the present time, notwithstanding the great increase in the make of pig iron, there is not being produced in Great Britain enough for the demands made upon us, and if America is going to call upon us this autumn for as much as she took last, we are very likely to see a resumption of high prices. No doubt America is making great efforts to supply her own requirements, and she will certainly succeed in time, but hardly this year. Will then the demand fall off?

Now, sir, I have raised two or three points in this letter which you can, I think, solve. How much too much iron is America receiving? How quickly will she be able to supply herself? And, will foreign iron continue to be imported this autumn?

These questions are equally important to English and American producers and consumers.

WALTER JOHNSON.

As the questions asked by Mr. Johnson are of general interest, and as we presume his letter was intended for publication, we answer it in our columns as fully and accurately as we are able.

It is impossible to say how much the importation of iron during the past seven months has exceeded the requirements of this market. If it were possible to obtain exact information of the amount of foreign iron in yard and store, the question could be easily answered; but this information cannot readily be obtained. Estimates differ between very wide limits, and all we can say as to the excess is that it is large. The opinion of those best informed seems to be that the amount brought here has exceeded the requirements of the market by about the amount of the purely speculative importations. It is believed that the market could have taken, with advantage, all the iron which has been imported to the account of consumers; but the difficulty is that large numbers of people who have no connection with the iron trades in any way, have been speculating in Scotch pig and English bar iron, and a very large part of the iron thus imported has gone into store.

There has also, we are informed, been a great deal of iron purchased in a speculative way by dealers, but information on this point is carefully guarded, and it is impossible to form any correct idea of the amount thus held. But for speculation, which in many cases is likely to prove unprofitable, probably not one-half of the iron which has come to this country since November last would have been sent here. We do not mean to imply by this that more than one-half of the total importation remains on importers' hands or is held to the account of speculators who cannot raise money enough to pay the duties; but we are of the opinion, nevertheless, that the importations have exceeded the actual requirements of the market by more than one-half the total amount sent here. But little, comparatively to

iron now coming in—the British shipments during March and the first week of April—will go at once into consumption.

The United States, it is believed by the best authorities in the trade, are now able to supply their own requirements for iron, without drawing on foreign sources. High prices and a large consumptive demand have enormously stimulated production. There are 431 furnaces in blast at the present time, with an estimated capacity of 88,410 tons per week. We may assume, therefore, that the actual production is not far from 80,000 tons per week. This is at the rate of over 4,000,000 tons per year. We have never before produced 3,000,000 tons in one year. The estimated consumption of pig iron in 1876 was 2,172,503 tons; in 1877, 2,418,216 tons; in 1878, 2,716,345 tons; in 1879, probably about 3,000,000 tons. There is no reason to suppose that the consumption this year will exceed the production to the extent of the stocks of foreign iron already on hand, or that the close of the year will not see us with a heavy surplus, presuming that importations from this time forward are unimportant.

That foreign iron will continue to be imported this autumn is extremely improbable. Makers here fully realize the fact that unless prices are put down to a point which will discourage importations by making them unprofitable, the country will be flooded with foreign iron. Consumers have already lost confidence in iron, and are buying sparingly. There is a preference for domestic iron which will enable it to compete successfully with foreign at a somewhat higher price, but makers have wisely decided to give up all idea of maintaining the difference which has hitherto existed.

There is a general feeling that there can be no confidence, no stability of values, no activity of distribution, until there are no longer any inducements to import iron, except perhaps in the small way in which it has always come.

Speculation is already crushed, and we see no reason why consumers should send orders abroad, as they could probably buy from yard or store here to better advantage.

We have answered our correspondent as fully and accurately as we are able. We see nothing on which English makers can base the hope of a continuance of the demand from this country for more than a very small part of the iron they have lately sent us, nor for that much until accumulations here are considerably reduced. The business has been largely overdone. There is nothing to warrant the expectation of another "boom" this spring, but there is every warrant for the prediction of a continued large consumption throughout the year, and a fairly steady market at prices which, while giving makers a margin of profit that under ordinary circumstances they would consider satisfactory, will leave no room for speculation and offer no encouragement to importations.

Concerning the tariff, which is always a subject of great interest to our English friends, we can say, with every confidence, that there is no probability of any change this year. Should the House of Representatives pass any tariff bills—which is extremely unlikely—the Senate, we are assured on the best authority, will reject them.

Low versus High Steel.

In many departments of manufacture the question whether iron or steel shall be used, has given way to a new one referring to the grade of steel to be employed. In dealing with a material new to them, engineers and constructors must, of course, move with the utmost caution, any false step on the comparatively unexplored territory before them being apt to have serious consequences for themselves and cause severe injury to an important industry.

As we have had occasion to show repeatedly, American engineers are fully aware to the value of steel as a material for bridges and other structural purposes, having in some instances boldly taken the lead in adopting it. Still, little appears to be done experimentally, on the part of manufacturers and consumers, to arrive at a very clear idea of the requirements which ought to be exacted, and opinions on the subject are still unformed, so far as the great majority of the profession is concerned. In England matters are different. Not one meeting of the great technical societies of that country passes without some discussion of this topic, and as additional facts—the result of close observation and mature experience—are submitted, many points requiring grave consideration are brought forward. Naturally, there are differences of opinion, but not until now have they led to the formation of what might be called two distinct parties, one of which advocates the use of those grades of steel which contain comparatively large amounts of carbon, and are therefore called "high" steels, while the other urges that steel low in carbon ought to be employed for structural purposes. The high steels are characterized by high tensile strength but low ductility, while the low or "mild" steel is chiefly remarkable for great ductility and medium strength. Both parties measured forces at the recent meeting of the Institution of Naval Architects, many points of interest being brought out in two papers read by Mr. Denny and Mr. West, and during the discussion which followed them. Mr. Denny, who detailed the results of long experience in the use of mild open-hearth steel for shipbuilding, gave some very important testimony in regard to

its peculiarities. He had found that with a hard plate having a mean tensile strength of 32.97 tons and an average elongation of 16.65 per cent., the former was reduced by annealing to 28.52 tons, while the latter was increased to 24.12 per cent. A ¼-inch plate of mild steel suffered only a lowering in the tensile strength from 26.6 to 24.05 tons, while the elongation was increased from 24.32 to 28.8 per cent. These figures refer to thin plates only, thicker plates having been shown to be less affected by the process of annealing. Mr. Denny argues from these tests that high steels can be brought within the desired limits of strength simply by annealing, and that the latter process injuriously affects milder grades. Dr. Siemens regarded the matter in a somewhat different light. Under legitimate loads the weaker steel was just as good as the stronger material. Up to loads going as high as 15 tons per square inch, mild steel was stiff as the harder varieties, as the elongation under such stress would be equal in both, and when the load was removed there would be no permanent set in either. At the present time a stress of 15 tons per square inch was as much as engineers could safely tax structures like ships with, and there is, therefore, no advantage in using material of greater tensile strength.

That foreign iron will continue to be imported this autumn is extremely improbable. Makers here fully realize the fact that unless prices are put down to a point which will discourage importations by making them unprofitable, the country will be flooded with foreign iron. Consumers have already lost confidence in iron, and are buying sparingly. There is a preference for domestic iron which will enable it to compete successfully with foreign at a somewhat higher price, but makers have wisely decided to give up all idea of maintaining the difference which has hitherto existed.

A very strong point, referred to by Dr. Siemens in his argument, was based upon experiments made on riveted joints by Mr. Kirkaldy for Mr. Denny's firm. It was ascertained by these tests that the joints riveted with steel rivets did not resist a greater strain than an average of 20 tons. Mr. Denny's own words were: "Taking a fair view of the matter, it would not be prudent to assume in ship riveting a higher shearing strain than 22 tons per square inch of area against, say, 19 tons for an iron rivet." It would seem absurd, under these circumstances, to call for a high material for the body of a ship plate when the finished single riveted seam itself is not capable of resisting strains higher than a certain limit. For ordinary riveted structures, therefore, low steel has all the necessary strength, and at the same time does not call for any expensive or inconvenient method of working, like drilling or annealing, with all the risks attending it. To this we may add that there is more difficulty in producing in large masses, with great uniformity, steel high in carbon than the milder grades. It would seem, from present appearances, that the mild material is better adapted for structural purposes than the hard varieties. Judging from past experience, however, there is every probability that manufacturers will succeed in making material which, while it possesses higher tensile strength, will be more ductile, a quality which is of great service in shipbuilding, but which is less important for bridges, boilers, &c. For high grades of steel possessing a tensile strength of 50 tons per square inch and an elongation of about 5 per cent., the problem would be to adopt such methods of riveting or welding as would insure a greatly increased strength in the seam.

Range of Prices of Iron for Nineteen Consecutive Years.

In connection with one of the subjects discussed in the editorial in our last issue on the "Position of Iron," we have been led to make some investigations relative to the price of merchant iron at the two centers—Philadelphia and Pittsburgh—in order to ascertain what has been the range and average of prices for a series of years. We are aware that such figures must be used with extreme caution, and that any deductions made from them will be at best only indications. There are many circumstances and considerations that existed in these years that must be known, to give the figures their exact value in any comparison. Still they have a certain value as indications, and even for the purposes of comparison.

April 29, 1880.

THE IRON AGE.

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ing also been deficient. In consequence of this state of things, emigration is assuming colossal proportions.

In Spain the grain crop has also been poor, so much so that 120,000 tons of wheat have to be imported to keep the people from starving. The country is politically and socially demoralized, and with the unsolved Cuban politico-economical question on her hands, and sinking deeper and deeper into debt, the outlook is not particularly promising. Holland, Belgium and Russia are getting on financially and commercially tolerably well, and so do the three Scandinavian countries, but from Sweden it is expected that 40,000 stalwart people will emigrate this year, most of them bound for the wheat growing West of America.

In England, on the other hand, the commercial developments have, on the whole, been satisfactory thus far this year, a great deal more so than on the Continent. This is due to the widespread and varied trade connections of Great Britain. But, of course, even London cannot control the general tendency of values in the long run. If business is bad on the Continent, even satisfactory trade in England cannot long counteract this influence. The excess of exports during the first two months taken together, as compared with the same time in 1879, shows the very large sum of about \$28,000,000. It is to be hoped that the proportion may be kept up for some time.

The general outlook, it will be seen, is not positively bad, but it is far from leading to great expectations, the less so as from this side no great encouragement in the shape of orders need be expected. On the contrary, various foreign goods will not unlikely be shipped to Europe, for the want of a sufficient outlet here, during the summer. There will be nothing gained by cherishing illusions with regard to the European spring trade. The happenings may be better than present prospects seem to indicate; but those who are hoping and looking for a universal "boom," have really no reason for their expectations which will bear critical investigation.

Evading High Price Contracts.

There is much complaint in business circles regarding the willingness evinced by those who contracted to purchase merchandise of one kind or another to repudiate, or "crawl out of," their contracts since the decline in prices has changed the market in the buyers' favor. This is not to be wondered at. Business men who figure closely and often leave themselves only narrow margins of profit, are very likely to squirm when compelled to receive and pay for goods bought when prices were much higher than they average in open market at the time of delivery. But the obligation which a contract of this kind imposes is as strong as any other agreement in business, and honorable business men will stand up to their agreements, unless, as is rumored to be probable in the case of contracts made for Lake Superior ore based on \$12.50 per ton at Cleveland, an agreement can be reached between buyer and seller which will be more satisfactory to both than the ore contracts now are. This, however, is an exception to the general rule, and less trouble will probably be experienced in these large transactions than in the smaller dealings between makers and manufacturers, based on contracts for iron and other materials. Many who express a determination to avoid receiving materials contracted for during "the boom," justify their course on the ground that, had the contracts proved unprofitable to the producers, they would have had serious trouble in getting them filled. There may be some truth in this; but a contract is a bond, and whoever enters into such an agreement does so with a full knowledge of the chances he is taking. He would not take the risk if he did not think that it was safer to contract ahead for what he would need than to wait until he needed it and then take the chance of getting it. He believes that the contract will give him some advantage, else he would not make it. When in the course of events it turns out that the advantage is the other way, it is neither honorable nor businesslike to make use of every little quibble which can be raised as an excuse for not keeping one's agreements. Unfortunately, there is a large class of buyers who appear to think that everything is fair in business which yields a profit, and who are now giving producers much trouble by breaking their engagements on every pretext that can be thought of. A decline in prices makes sad havoc with what a certain class of writers delight to call our "standards of business morality."

The Ore Question in the West.

There is a point in connection with that part of the editorial from our issue of March 11 which we quoted in the article on "The Position of Iron," in our last issue, to which we wish to call attention. The part in question referred to the effect the price of Lake Superior ore for next season would probably have on the price of pig iron, and, consequently, on merchant iron. From all indications these words are as good to-day as when they were written. If our readers who are not admitted into the secrets of the iron trade imagine that we spoke unadvisedly, or that the necessity for high prices of merchant iron likely to result from high-priced Lake Superior ore has passed, they are mistaken. One of the most pressing and most perplexing of the problems of the iron trade in the West, is this one that comes with \$12.50 ore. Contracts for ore have been made for the whole season's delivery, based on these prices, and the furnace and mill men are anxiously asking for some way of relief. If iron keeps at the present or lower figures, and the ore men insist on the fulfillment of the contracts, there are serious times ahead. A ton of pig iron made at Pittsburgh out of this \$12.50 grade of ore, the freight from Cleveland to Pittsburgh being, say, \$2.50, and 1/4 tons of ore being required to make a ton of pig, will represent \$22.50 worth of ore. If inferior ore or cinder is used, an inferior pig, worth less, is made. In addition to this, about 500 pounds of ore are used as fix to a ton to a ton of bars, or \$3.75 more. This makes the ore to a ton of merchant iron worth \$26.25, without coke, coal, lime, labor, wear and tear or anything else, or

about 1 1/4 cents per pound for ore alone. Is it any wonder that the ore question is a perplexing one—that the chief topic of discussion, when iron men meet in the West, is, What shall we do about ore? An effort is making to secure a reduction from the contract price of ore, but we are not advised whether it is with a prospect of success or not. If the ore companies insist on the contract price and the contracts are binding, the Western iron men will sigh for the 4-cent card.

At this juncture, to agitate tariff changes is to unsettle the most important industries of the land and bring back again uneasiness, distrust and insolvency. There can be no question about the need of tariff modifications, but let the country have time to recover from the long years of failure and bankruptcy before any important changes are made. The subject is one of national importance. It should not be hastily considered. No measures proposed at the latter end of a session can do justice to the matter, and its agitation should, therefore, be postponed. There is no reason at this time why general action should be taken in connection with the proposed revision on sugar and paper.

For the matter of that, we are not sure that the question of cheap paper will not sooner solve itself through the competition of domestic manufacturers than through foreign competition. As to sugar, what is needed is simply a change in the method of assessing and collecting the duties which will protect the Treasury, and avoid the endless conflict which has been waged under the present system between sharp importers and sharp Treasury agents.

Congress and the Driven Well Patent.

The House Committee on Patents, it is stated, has agreed to report a bill making certain important changes in the patent laws, among which are the following:

First.—The owner of a patent is not to be entitled to recover for its use by unauthorized persons a greater sum than the average amount paid by persons who have taken out a license to manufacture and sell the said patent.

Second.—Vendors and not innocent purchasers of patented articles, are to be held liable for infringement.

Third.—In cases of willful violation of the rights of a patentee he shall be entitled to recover, in addition to damages, the cost of suit.

Fourth.—If an article remains unused, and so unknown, for eight years after the patent therefor is issued, the inventor's right to a reissue of the patent shall cease.

Fifth.—The fees charged inventors and patentees on the filing of applications, the issue of patents, &c., are to be reduced 20 to 25 per cent. from present rates.

The weak point of this bill seems to be in the second and third clauses. When an invention is infringed the inventor must sue wherever he finds the infringement. It is not the infringer, but the infringement, which owes him tribute. There are a very large class of patents which can only be protected by bringing suit against infringements in the possession of innocent purchasers. The driven well patent is one of them, and we imagine that this is the very patent at which this proposed legislation is aimed. A dispatch from Washington, under date of April 25th, says that Congress has been flooded with petitions, asking that something be done to put a stop to the efforts of the owners of the driven well patent to collect what they claim in royalties and damages from those who have had such wells put down by unauthorized persons. Mr. Ryan, of Kansas, has introduced in the House a joint resolution, instructing the Attorney-General to bring suit, in the name of the United States, to cancel the letters patent issued in 1868 and 1871 to Nelson W. Green for this kind of well, on the ground that Green was not the original inventor, and that the device had been in use for years in many parts of the country and had long been common property. Considering the fact that the Green patent has been sustained by decisions in thirteen circuits, and that the efforts of a combination of pump and point manufacturers, formed to resist it, to show that the patent was anticipated by such use of the invention claimed as to make it common property, were unsuccessful, we imagine the Attorney-General will not have as clear a case as Mr. Ryan seems to think.

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There is a point in connection with that part of the editorial from our issue of March 11 which we quoted in the article on "The Position of Iron," in our last issue, to which we wish to call attention. The part in question referred to the effect the price of Lake Superior ore for next season would probably have on the price of pig iron, and, consequently, on merchant iron. From all indications these words are as good to-day as when they were written. If our readers who are not admitted into the secrets of the iron trade imagine that we spoke unadvisedly, or that the necessity for high prices of merchant iron likely to result from high-priced Lake Superior ore has passed, they are mistaken. One of the most pressing and most perplexing of the problems of the iron trade in the West, is this one that comes with \$12.50 ore. Contracts for ore have been made for the whole season's delivery, based on these prices, and the furnace and mill men are anxiously asking for some way of relief. If iron keeps at the present or lower figures, and the ore men insist on the fulfillment of the contracts, there are serious times ahead. A ton of pig iron made at Pittsburgh out of this \$12.50 grade of ore, the freight from Cleveland to Pittsburgh being, say, \$2.50, and 1/4 tons of ore being required to make a ton of pig, will represent \$22.50 worth of ore. If inferior ore or cinder is used, an inferior pig, worth less, is made. In addition to this, about 500 pounds of ore are used as fix to a ton to a ton of bars, or \$3.75 more. This makes the ore to a ton of merchant iron worth \$26.25, without coke, coal, lime, labor, wear and tear or anything else, or

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All reports seem to agree that the revival in orders and trade that was to follow at once the reduction in price of iron to 3 cents East and 3.2 cents West, has not come. There has been but little, if any, improvement, and some sections report that orders have greatly fallen off. Prices, even below those given above as nominal rates, will not, it is believed, tempt buyers, and a great many manufacturers are confirmed in the belief they expressed before the reduction—that its only effect would be to reduce the price on which iron was sold, with but little, if any, corresponding gain. These parties claim that just as much iron would have been sold on, say, a 4-cent card at 3 1/2 cents, as is now being sold on a 3.2-cent card at 3 cents. The cost of labor to a ton of iron may have been reduced \$2; but, to offset this, the actual selling price of what iron is sold has been reduced \$8 to \$12. This condition of affairs proves again the truth of the statement in the leading editorial of our last issue, that "most of those who have ventured predictions regarding the course of iron have been mistaken." Those who argued against a 4-cent card were the ones who argued in favor of the benefit to be derived from a 3-cent rate. The 4-cent card, as events proved, was unwise. The 3-cent rate, as events show, has not accomplished the wonders claimed, and the future is still uncertain. Of one thing, however, we may feel confident—the present dullness cannot continue. There are too many enterprises under way that require iron. Money is easy, immigration is unprecedented, and the consumption of iron in this country this year will exceed that of any previous year; but at what price it will be sold we do not venture to predict.

The stagnation in the merchant iron trade in the West is already having its effect on the blast furnaces. Since our report on the condition of the blast furnaces, published in our last issue, was made up, we have heard of quite a number of coke furnaces that have gone out of blast, or will do so shortly. It may be that a scarcity of ore and the anticipated high price of ore and coke may have something to do with this blowing out, but if there was any demand at anything like remunerative prices, these furnaces would continue to blow. Many of them while not in Pittsburgh, are contiguous to it, being in the Shenango Valley and eastern part of Ohio. Our Industrial Items from week to week will show what furnaces blow out.

NEW PUBLICATIONS.

KNIGHT'S POPULAR HISTORY OF ENGLAND. The Standard Series. I. K. Funk & Co., Publishers, 10 and 12 Dey Street, New York.

The publishers of "The Standard Series" are doing an excellent work in placing within the reach of those who cannot afford to purchase costly works and have not access to well appointed libraries, a class of superior literature at very cheap prices. Among those thus far published in cheap form, are Carlyle's "Choice of Books," Macaulay's Essays, Arnold's "Light of Asia," Carlyle's Essays, Blackie's "Self Culture," and several of a distinctly religious character, which are well known and generally approved as among the best of their class. The most ambitious undertaking in this series is Knight's "History of England," complete in eight volumes at 30 cents a volume. The first of these, 158 pages, is at hand, and merits favorable comment. It is of quarto size, printed two columns to the page in brevier type, leaded, on a good quality of white paper. This history is reprinted under an arrangement with the owners of the English copyright, and will not be abridged in any respect. The price of previous editions of this work ranges from \$18 upward.

In this enterprise Messrs. I. K. Funk & Co. deserve encouragement. The mistake of those who have previously attempted cheap editions has been in making them too cheap. They have been badly printed, and while answering very well for one reading, have been in no respect acceptable substitutes for more costly editions of the same works. "The Standard Series" avoids these defects, and for cheap republications the books are all that could be desired. The publishers are actuated by high principle, apparently, and will publish nothing sensational or unclean. Their list will include only standard works of the very best class, and in so doing they will meet the wants of a large and intelligent class of readers, who want something better than the publishers of cheap literature have thus far deemed it profitable to furnish them.

An Expert's Story of the Missouri Tornado.

Professor John H. Tice, the well-known meteorologist, who went to Marshfield to investigate the phenomena connected with the late storm, telegraphed the St. Louis Republican as follows:

"Everywhere along the track of the tornado there is evidence of a wave of water flowing in the rear of the cloud spouts. At some places there are only faint traces of such a wave. At others the debris is carried up and over obstructions two or three feet high. These waves or currents flowed in the greatest volume up hills. There are places where the entire top soil is washed away by the currents. Fibrous roots and tufts of grass show their direction to have been up hill, and what is more significant, from all points of the compass toward the top of the hill when the tornado was raging at the time and expending its force. No

trace at any point can be found where they flowed down-hill. Many level places are swept clean of soil. Leaves, grass, debris of wrecked buildings and fragments of planks carried along by the current and left in its track, arranged themselves longitudinally to the current.

"The following is vouchered for by George Gilbert of this place. He and his wife and four children were on a visit eight miles in the country, and the center of the tornado passed within five or six yards from where they were. A wave of water, apparently 15 feet high, rolled in the rear of the point of contact of the cloud spout with the earth. It rolled over them in a second, and was icy cold, drenching them thoroughly. About two miles northeast of the town stones weighing from 500 to 700 pounds were lifted out of the earth and carried along some distance in the track of the tornado.

"J. H. Williams, presiding Justice of the County Court and residing in Panther Creek Valley, tells me a stone fell in the center of a field belonging to H. Rose, the weight of which was estimated at two tons. It is not known whence it came."

The tornado, so far as is known, commenced in Arkansas, in Stone County. In Crow Creek settlement 10 persons were killed and on Flat Creek 6 persons were killed.

Tariff Matters at Washington.

(From our Special Correspondent.)

WASHINGTON, D. C., April 28, 1880.

Representative Tucker, chairman of the sub-committee charged with the consideration of the duty on hoop iron, by direction of the Committee of Ways and Means, has prepared a bill covering the points of controversy, and will accompany it with a report, both of which will be presented to the general committee for their action to-morrow. There is no doubt of the committee giving it their approval, as Representative Gibson, having recorded his vote in favor of the Tucker bill, it will have a majority. The vote was given in this correspondence last week and has not changed. The provisions of Mr. Tucker's bill have also been given. That gentleman characterized it today as "a measure to save the contractors and to reduce the duty on all classes of hoop iron to 35 per cent. ad valorem." He added: "After the committee shall have approved the bill, it is my purpose to urge prompt action by the House."

Information received here from the iron manufacturing centers of England, and notably Birmingham, says that, owing to the procrastinating course of the Secretary of the Treasury, the importers of the United States have succeeded in getting in enormous orders, and if the bill legalizing all contracts made prior to March 12, and authorizing entry at 35 per cent. ad valorem during the present calendar year, should become a law, the supply would meet all the demand for hoop iron for months to come. The report accompanying the bill prepared by Mr. Tucker is brief. He hesitates, however, in authorizing its publication in advance of its adoption by the committee. It reviews the controversy which has been pending for more than ten years upon the question of classification and duty, and argues stoutly in favor of the interpretation that hoop iron cut to lengths is a manufacture of hoop iron, and properly belongs under the head of "not otherwise provided for."

The Eaton bill, providing for the creation of a commission to have charge of all questions pertaining to the tariff, so as to take this important subject out of the hands of a tinkering House Committee, meets with very general favor in the iron districts, judging from the number of petitions being received here almost daily by Representatives and Senators, urging them to press its adoption. Representative Bayne, of the Allegheny District of Pennsylvania, has been specially favored with these petitions, and has also had an interview with several members of the Finance Committee of the Senate on the subject. The disposition there is favorable to this bill, and an effort will be made to secure concurrent legislation on the subject at the present session.

The contemplated gathering in the valley of the Beaver in Western Pennsylvania in the interests of the tariff, and under the auspices of the Amalgamated Association of Iron, Steel and Tin Workers, meets with very general approval among the members of both houses of Congress who take an interest in an intelligent understanding of this all-important question. The postponement of the gathering until June 5, will ensure success so far as the attendance of officials from Washington is concerned, as the Republican Convention will be held, and a number of politicians of that political persuasion were not disposed to attend until after that event. The Amalgamated Association embraces a membership of 50,000 workers in these great industries, and the object of the meeting is to stimulate and unite the tariff influence among the laboring classes. Several years ago, the manufacturers held a similar gathering, which was attended by good results and a more harmonious action in tariff matters. The coming meeting is by the working classes, and it is proposed to unite the public expressions of this class with the manufacturers and to show that labor is in sympathy with capital on this question. The governors of Pennsylvania, Ohio and West Virginia have indicated their intention to be present and participate in the proceedings. Senators and Representatives will also be present.

The Cologne Gazette states that a committee, consisting of representatives of the German industrial establishments which tendered an invitation to the British Iron and Steel Institute to hold its annual meeting this year in Dusseldorf, is already busily engaged in making preparations for the entertainment of the visitors. The reception will formally begin on August 25. The two following days will be devoted to discussions, the inspection of special exhibitions, and visits to various industrial establishments and mines in the Rhine-Westphalian district. On Aug. 29 there is to be an excursion by special train up the Rhine Valley to Bingen, returning by steamer to Cologne.

The Gazette says that the promised gathering of English and German iron and steel manufacturers on German ground will attract a very large share of attention, and expresses a hope that the efforts of the committee will be responded to by the local authorities and others in the neighborhood of Dusseldorf who are interested, in a manner worthy of the occasion.

Capacity of the Iron and Steel Works of the United States.

Mr. James M. Swank, secretary of the American Iron and Steel Association, has compiled, in the preface of his new directory just being published, the following interesting data relating to the number and capacity of the iron and steel works of this country. He says: There has been noticeable in the iron trade of this country a very strong tendency to substitute steel for iron and to increase the production of individual blast furnaces. Our steel industry is now the second in the world in productive capacity, and in a year it will pass that of Great Britain and take the first rank. The increase within the last year in the capacity of our Bessemer and open-hearth works, either completed or projected, is equal to an addition of 50 per cent. to the capacity which existed in 1878. The improvement in our blast-furnace practice is simply marvelous, and to the confidence which has been inspired in the improved practice which has been so generally adopted must be attributed the enormous annual capacity that is claimed for 607 completed furnaces, namely, 6,500,000 net tons, or 5,800,000 gross tons, of pig iron. It is well to remember, however, that, in the nature of things, all of these furnaces can never be in operation at the same time, and that the large capacity that is claimed for our rolling mills and steel works is not capable of realization in actual practice, for obvious reasons. Without further preface we present below a complete summary of the number and capacity of the iron and steel works which are described in the directory.

Number of completed blast furnaces on March 1, 1880.....	697
Number of blast furnaces building on March 1, 1880.....	23
Number of blast furnaces building on March 1, 1880.....	44
Annual capacity of completed furnaces in pig iron, net tons.....	6,500,000
Annual capacity of the 223 bituminous furnaces, net tons.....	2,825,000
Annual capacity of the 228 anthracite furnaces, net tons.....	2,600,000
Annual capacity of the 26 charcoal furnaces.....	1,075,000
Number of completed rolling mills and steel works on March 1, 1880.....	382
Number of rolling mills and steel works building on March 1.....	10
Number of single puddling furnaces (a double furnace counted as two single ones	

Special Notices.

A. J. STEINMAN, Chairman. W. B. MIDDLETON, Supt.
W. G. MENDINHALL, Sec'y & Treas.

OFFICE OF

PENN IRON COMPANY, Limited

MANUFACTURERS OF

**Merchant Bar Iron, Hammered and
Rolled Axles, Car Forgings, Bridge
Work, Fish Joints, Bolts, R. R.
Spikes, Bolt Ends, &c., &c.,
LANCASTER, PA.**

WANTED.

A Shear for splitting old rails lengthwise, with
knives from 24 to 30 inches long. Address
PENN IRON CO., LIMITED,
Lancaster, Penn.

For Sale.

Five hundred acres Gas and Coke Coal on lines
of B. & O. R. R., Connellsville, Cambria, 35 miles
from Pittsburgh. Quality unsurpassed. The only
locality where pure Youghiogheny Gas Coal and
Connellsville Coke Coal are found in the same
area. Both completely separate. Gas coal found at
less cost than elsewhere. Gas Coal seam 6 feet,
Coke Coal seam 3 feet. Analysis of Coke gives 95
per cent. of Carbon, and less than 3 per cent. of
ash. Will construct one to 300 ovens if desired,
and have some ready to produce Coke by October
1st.

WAVERLY COAL & COKE CO.,
Pittsburgh, Pa.
or, H. C. BUGHMAN,
57 Broadway New York.

For Sale.

Stock of Hardware, Stoves, Implements, Tim-
ers' Tools and Stock, in South Western Iowa.
Address
Y,
Office of The Iron Age, 83 Reade St., New York.

HAMMACHER & DELIUS,

Hamburg, Germany,

62 Alter Wall,

Solicit correspondence with American Manufac-
turers and Inventors in regard to representation
in European countries.

Splendid Investment.
The noted Carter's Furnace Iron property, in
Carter County, East Tennessee, for sale; 12,000
acres, fine timber, labor abundant and cheap,
magnificent water power, one five-ton cold blast
charcoal furnace; best car wheel iron now yielding
large profit. Best New York and Tennessee
references. For terms, address

HUNSDORF CARY,
Room 32, No. 33 B'way, N. Y.,
or 5 Madison St., Memphis Tenn.

NAILS FOR SALE.

A small quantity of well-known brands of cut
nails, in lots and sizes to suit. State quantity and
sizes wanted, and address

NAILS, Box, 1169,
New Haven, Conn.

WANTED.

Iron Planer, 36 x 36 in. x 8 feet.
Pulley, 54 x 24 in., 3 in. bore.
Machine Shop 5-ton Crane.

FOR SALE.

12 x 24 in. Engine, Fly Wheel 5 x 2 feet; been in
use about two years. Can be seen running at
THE STILES & PARKER PRESS CO.,
Middletown, Conn.

To Capitalists and others Seeking
Manufacturing Sites.

The Parnassus, Pa., Industrial Association offers
liberal inducements in land and cash to parties
who will locate manufacturing establishments in
their town. Natural Gas, Coal and Iron Ore in
immediate vicinity. Address

PARNASSUS INDUSTRIAL ASSOCIATION,
Parnassus, Westmoreland Co., Pa.

For Sale.

Stock of hardware, stoves and implements, and
store furniture, in one of the best towns in Kansas.
Address

HARDWARE,
Box 166, Salina, Kansas.

For Sale.

Engine and Boiler, 35-horse power.
Shafting, Pulleys, &c.
Steam Hoisting Apparatus.
Also, a complete set of R. R. card making ma-
chinery.

Apply to

GEORGE BAILEY,
290 Pearl street, Buffalo, N. Y.

For Sale.

The valuable Iron Ore property of the Wayne
County Mine Company located in Wayne Co.,
N. Y., on the line of Lake Shore division of Rome,
Watertown & Ogdensburg R. R., with tracks and
branches leading to the mines. This property ex-
tends over four miles along said road, and nowhere
over half a mile from it, and contains over two
millions of tons. It is now in full operation and
shipping from 100 to 200 tons per day, and is capable
of doubling the amount shipped on the 17 miles
from port of Geneva, one of the best harbors on
Lake Ontario, with ample dock room for shipping
by lake. For further particulars, address
J. E. ELLIOTT, Sec'y,
Clinton, Oneida Co., N. Y.

PARTIES desiring to manufacture Fire Brick
and Pottery can secure a location on the
line of the Brighthope Railway. Wagons allowed
fuel and water, freight paid to tide water, \$1 per ton;
\$1 per ton to Richmond and Petersburg, \$1 so
per ton. Good local demand. Product can be de-
livered on Chesapeake and Ohio, Richmond and
Alleghany, and Atlantic Coast Line without break-
ing bulk.

JAMES R. WUTH, Sup't and Treas.,
Richmond, Va.

AGENTS WANTED to sell to the Hardware
Trade, Jobbers, Retailers and Exporters a
standard article, which commands a ready sale.
Commission liberal and samples quite right. Ad-
dress, stating ground covered.

C. H. D.,
Office of The Iron Age, 83 Reade St., New York.

Trade Report.Office of THE IRON AGE, I
WEDNESDAY EVENING, April 28, 1880.

The financial markets have been only
moderately active during the past week.
The bonds offered to the Treasury for the
Sinking Fund, to-day, amounted to \$7,835,
400. Of these \$3,000,000 were accepted.

The importations of specie and bullion for
the week ending April 23 amount to \$135,055,
including \$12,152 gold and \$122,903 silver.
Since the 1st of January the importations
will reach \$2,992,189, consisting of \$1,208,
051 gold, \$1,783,119 silver and \$1019
brass and copper coin. From the 1st
of August, 1879, to April 23, 1880, there
has been a total importation of \$80,999,851,
of which \$76,467,332 is gold and \$4,532,519
silver.

Money has been easy, the rate for call
loans having fluctuated between the limits
3% and 6%.

Government bonds have been strong, and
such changes as have occurred have been
for the better. Railroad bonds have been
strong and generally higher.

There has been less activity in the stock
market, and prices have been alternately
strong and heavy. Until Monday afternoon
they were generally strong, but after that
they weakened and continued weak to the
close. The principal dealings were in Erie,
Pacific Mail, Ontario and Western, Wabash
and Pacific, Western Union Telegraph and
the Coal stocks.

The bank return shows a gain of \$1,654,
675 in reserve, which now stands at \$2,191,
525, against \$12,324,050 at this time last
year, and \$17,300,150 at the corresponding
period in 1878. The loans show a loss this
week of \$5,364,600, the specie is down \$1,
066,100, the deposits other than United
States are down \$4,023,100, and the circu-
lation is decreased \$230,200.

The following is an analysis of the bank
totals of this week compared with that of
last week:

April 17.	April 24.	Comparisons.
\$24,250,800	\$27,886,200	Dec. \$5,164,075
5,050,800	4,893,600	1,067,200
Legal tend'r's	13,860,000	15,432,100
Tot. reserve	63,916,800	61,415,700
Deposits	4,023,100	4,023,100
Required	63,379,050	62,224,175
Surplus	536,850	2,191,525
Circulation	20,843,000	20,612,800
		230,200

The slight improvement is reported in the
demand for Nails this week, but the orders
we hear of are only for small lots for local
requirements. In regard to price the market
is in a very unsettled state, and although
the nominal figure is \$5 for rod, to God, still
we hear of considerable shading, and have
no doubt that for a fair sized order \$4.50
would be accepted.

The Western Nail Manufacturers' Associa-
tion held a meeting in Pittsburgh to-day,
at which it was agreed that the Nail mills,
which have been idle for several weeks,
should resume work on Monday next. The
card rate was reduced to the basis of \$4
for rod.

Since our last writing the manufacturers
of Iron Wire have made some important re-
ductions in their prices. The revised dis-
counts will be found under the heading of
"New York Wholesale Prices" on another
page.

We have received the following:

On and after the 26th of April, 1880, the
price of Dover Egg Beaters will be \$24 per
gross, net. Less than one gross, \$2.50 per
dozen.

DOVER STAMPING CO.

BOSTON, April 20, 1880.

We have received the following notices of
removal:

The Passaic Rolling Mill Company, of
Paterson, N. J., have removed their New
York office to room 45, Astor House.

Henry B. Newhall has removed from his
old stand, No. 1 Warren street, to No. 105
Chambers street.

The Union Manufacturing Company have
removed their warehouse in this city from
No. 98 to No. 96 Chambers street.

The Branford Lock Works have moved to
No. 103 Chambers street.

C. E. Jennings & Co. have moved to No. 96
Chambers street.

Malby, Curtis & Co. have moved from
No. 34 Reade street to No. 98 Chambers
street.

Martin Doscher, agent for G. W. Brad-
ley's Edge Tools, has removed to No. 85
Chambers street.

On May 1 the New England Butt Com-
pany will remove their warehouse in this
city from No. 30 Platt street to No. 99
Chambers street.

The attention of the trade is invited to
the advertisement of the Norris Pulley, on
page 22. The manufacturers write us that
these pulleys have met with a large sale
everywhere, and are extensively used by all
the leading sash and blind factories in the
country. The saving in time is so great
that mill cannot afford to be without them,
and in connection with a hand gauge for
carpenters, made by us, they are coming into
general use." These pulleys are manufac-
tured in all sizes and various styles of finish,
and we are informed, cost no more than an
ordinary Frame Pulley.

We invite attention to the advertisement
of "Ajax, Jr." and "Hebe" Lawn Mowers,
on the 20th page. These goods are manufac-
tured by L. Wilder, Hoosick Falls, N. Y.,
and are sold in this city by Leonard &
McCoy, No. 118 Liberty street.

Some time ago we mentioned the fact of
the amalgamation of the leading Screw man-
ufacturers in England into one large corpora-
tion, to be known as Nettlefolds, Limited.

The following particulars of the organiza-
tion of the company will be interesting to
many of our readers:

NETTLEFOLDS, LIMITED.

Incorporated under the Companies Act, 1860 to
1870, Cap. 11, c. 1, n. 75,000 shares of £10
each.

Directors—J. S. H. Nettlefold, Birming-

ham, chairman and managing director; Freder-
ick Nettlefold, London; Alfred Field, Birming-
ham; Thomas Gladstone, Birmingham; John
Thewlis Johnson, Manchester; Sampson Zachary
Lloyd, Stourport.

Stocks—Birmingham Joint Stock Bank,
Birmingham and County Bank, Limited; Solicitors
Messrs. Ryland, Martineau, Carslake and Good-
win, 7 Cannon street, Birmingham. Auditors
Messrs. Carter and Carter, Waterloo street, Bir-
mingham. Secretary—Reginald Parker.

This company has been formed for the purpose
of acting as agents for their products for the
various manufacturers and works mentioned be-
low, with the businesses carried on there, and all
the patent rights, machinery and trade property
belonging to such businesses, namely:

1. Messrs. Nettlefolds—Freehold Works at Heath
street, Birmingham, and Cranford street, Smeth-
wick (for the manufacture of Wood Screws, Wire
nails, &c., wire, &c., wire); Freehold Works at King's
Wood, North Warwickshire, for
the manufacture of Wood Screws and other arti-
cles. Leasehold Works, warehouses and offices in
Broad street and Attwood Passage, Birmingham.
Leasehold Wire Works in Principe street, Bir-
mingham. Freehold Works at Hadley, Shropshire,
known as the Castle Iron Works. Leasehold Col-
liery, Ketley, Shropshire, known as the Ketley
Collieries.

2. The Birmingham Screw Company, Limited—
Freehold Works at Smethwick (for the manufac-
ture of Wood Screws), and adjoining property.

3. The Manchester Steel Screw Company, Lim-
ited—Freehold Works at Bradford, Manchester,
for the manufacture of Screws.

4. Mr. John Cornforth—Leasehold Wire and
Wire Nail Works, in Berkeley street, Bir-
mingham.

5. Messrs. Lloyd & Harrison—The Screw busi-
ness carried on by this firm at Stourport.

For the above purposes the company has been
registered with a share capital of £175,000, divided
into 7,500 shares of £20 each. It is not intended,
in the first instance, to issue more than 6,000 of
these shares, 1,000 of the shares to be so issued
will be preference shares, bearing a fixed cumulative
dividend of 5 per cent. per annum. The remain-
der will be ordinary shares of the company.

In addition to the share capital, the directors are
empowered, by the articles of association, to issue
to the vendors of the works purchased, or
of other assets, or to the shareholders of the
company, up to £10,000, to be called "Deferred
Profit Debenture Debentures," not exceeding
5 per cent. per annum.

These debentures will bear a rate of interest
(not exceeding 5 per cent. per annum) equal to
the dividend from time to time declared on the
ordinary shares of the company.

They may be redeemed at any time by the com-
pany at one month's notice, but, if not so re-
deemed, will bear interest at 5 per cent. per annum
of 29 years, except in case of liquidation,
when the amount would be payable only out of
assets that might remain after full return of the
capital of the original preference shares.

In order to provide for the gradual reduction
and discharge of the deferred profit debentures,
a provision has been inserted in the articles of
association that no dividends on ordinary shares
shall exceed 6 per cent. per annum until all
debentures are paid off. There is also a provision
for the establishment of a fund, to be called the
"Deferred Profit Debenture Fund," to be formed
by the appropriation and accumulation of sur-
plus profits, and to be applied in discharge of the
debentures.

It is intended to issue the debentures in 21
series of not more than £2,000 in each series, and
to redeem the whole of a series whenever the
available funds are sufficient for the purpose.

The company has entered into agreements with
the different vendors for acquisition of their sev-
eral properties, enumerated above, at the follow-
ing prices, namely: Messrs. Nettlefolds, £276,
000; Mr. John Cornforth, £24,000; Mr. Lloyd & Har-
rison, £21,000; Mr. John Cornforth, £24,000; Messrs.
Lloyd & Harrison, £21,000.

In each case (except that of the purchase from
Mr. Cornforth) the business will be taken to as a
going concern, as on the 1st January, 1880, the
company paying all trade debts due by, and re-
ceiving all books and records of the vendor
on that date. In Mr. Cornforth's case the business
will be taken as on the 16th February, 1880, the
company neither receiving nor paying debts then
owing. From these respective dates the profits
will belong to the company, subject to a payment
to

Lead.—The present aspect of the Lead market is the reverse of cheerful, there being much pressure exercised on it by parties out West wishing to create a decline here, and not without success, favored as this attempt is, moreover, by cable news from Europe to the effect that the tendency there has also become a downward one once more, probably by the failure of the so-called speculative syndicate in trying to bolster up prices. If these luckless syndicates would but leave the metals alone and allow them to settle down upon a sound basis at this juncture, they would confer a singular favor upon the metal trade. It is most essential just at present that the metals should stand on their own merits. Everybody is aware that the late so-called revival has proved a dead failure, so far as metal values are concerned, and that all speculation for a rise is doomed to disappointment while such is the sentiment of Europe and America. Sales have been effected slowly here, being confined to a small jobbing trade at 5 $\frac{1}{2}$ ¢, the market closing at 5 $\frac{1}{2}$ ¢ @ 5 $\frac{1}{2}$ ¢ for Common Domestic, and 5 $\frac{1}{2}$ ¢ for Refined. In the latter nothing has transpired. German production last year has been 3 per cent. in excess of 1878, proving to have been 74,000 tons of Pig Lead. Manufacturers of Lead remain unchanged. We quote: Sheet Lead, 9¢; Pipe, 8 $\frac{1}{2}$ ¢, and Tin-lined Lead Pipe, 15¢, less the usual discount to dealers.

Selter and Zinc.—Nothing has transpired; the market is dull, and we quote both Common Domestic and Silesian, 6 $\frac{1}{2}$ ¢. There have been produced in Germany 97,000 tons of Selter in 1879, showing an increase of about 12% over 1878. Sheet Zinc is nominal.

Nickel.—There has been no change; a moderate demand prevails at \$1.50 for Prime American.

Antimony.—We have relapsed into dullness here. We quote at the close, Cookson, 23¢ @ 23 $\frac{1}{2}$ ¢, and Hallett and Johnson, 18¢ @ 18 $\frac{1}{2}$ ¢.

COAL.

The market for the present week shows little change from that of last week. The suspension does not seem to have had any perceptible effect, in spite of the hopes of the companies. One of the strongest bull reports, which was published on the 26th, says that the market is hardly as active as was hoped for before the suspension. This we think, a very strong admission. Dealers in and around New York city are buying from hand to mouth, preferring to wait and run the risk of a turn in the market. During the week there has been very little inquiry for Coal, and that which has been sold has, in a large proportion of cases, been shaded. The small Coals—No. 2 Chestnut and Buckwheat—are brisk, being taken for manufacturing purposes. The large Coals are in pretty fair demand, though we hear that there is some cutting, even on manufacturing sizes. The companies, so far as can be learned, are holding strictly to circular rates, but the outsiders are "giving the usual commissions," which is, in plain language, cutting prices to almost every one. Stove, while nominally \$4, is reported to be obtainable at \$3.75. Circular prices are probably shaded at from 10¢ to 25¢ per ton, according to the customer and the dealer. There is a strong talk among the companies of a continued suspension in May, not so much to reduce the quantity as to show buyers that the companies mean to control the market and ask such prices as they choose. Just now there is some difficulty in deciding whether it shall be a three-days-per-week suspension during the whole month, or a week or two total suspension at the close.

The Philadelphia *Ledger* says: "It is intended, however, that no advantage shall inure to consumers from lessened production, and Coal which is not ordered and shipped now because of the prices, producers propose to hold at higher prices as the season shortens and crowd more tonnage into a few weeks later in the season." In spite of this very strong language, one of the most experienced and careful dealers in New York advises his manufacturing customers to wait, and buy from hand to mouth as occasion may render necessary. He also says that, while there may be a break, it is not likely that there will be an advance. This shows both sides of the case. It is hardly needful to add that consumers seem to be following the waiting plan. The regular quotations are the same as last week, the free-burning Lump, Grate and Egg ranging about \$4; Lehigh Lump, \$5 @ \$5.25; Lehigh Grade and Egg, \$4.25; Lehigh Stove and Chestnut, \$4.

Freights are unchanged. Rhode Island, 90¢; Boston, 1¢; with Portland about 75¢ and discharged. There is still a scarcity of vessels for Sound ports, with an abundance for places where return ice freights can be obtained.

OLD METALS, PAPER STOCK, &c.

We have nothing new to report in the Old Metal market this week, and our quotations are but slightly changed since our last writing. The Rag and Paper Stock market continues weak. There is too much stock offered and no buyers.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy	7 $\frac{1}{2}$	10 $\frac{1}{2}$
Copper bottoms	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Yellow Metal	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Bronze, heavy	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Brass, light	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Composition, heavy	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Lead, heavy	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Tea Lead	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Zinc	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Pewter, No. 1	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Feather	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Wrought Iron	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Light do.	10 $\frac{1}{2}$	12 $\frac{1}{2}$
Stove Plate	12.50	15.00
Machinery do.	17.50	20.00
Grate Bars	7.50	10.00

The prices current for Rags, &c., are as follows:

Canvas, Linen	7 $\frac{1}{2}$	10 $\frac{1}{2}$
White Cotton, New	7 $\frac{1}{2}$	10 $\frac{1}{2}$
" No. 2	7 $\frac{1}{2}$	10 $\frac{1}{2}$
Seconds	7 $\frac{1}{2}$	10 $\frac{1}{2}$
Soft Woolens	8 $\frac{1}{2}$	10 $\frac{1}{2}$
Mixed Bags	2 $\frac{1}{2}$	3 $\frac{1}{2}$
Gunny Bagging	2 $\frac{1}{2}$	3 $\frac{1}{2}$
Jump Buttons	2 $\frac{1}{2}$	3 $\frac{1}{2}$
Kentucky Bagging	4 $\frac{1}{2}$	6 $\frac{1}{2}$

Book Stock 3 $\frac{1}{2}$ c. @ 4 c. @

Newspapers 2 $\frac{1}{2}$ c. @ 3 c. @

Paper and Scraps 4 c. @ 5 c. @

Kentucky Bale Rape

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending April 27, 1880:

Hardware.

Allan & Nixon,	Hdw., cs. 3
American Screw Co.	Midse, pkgs. 2
Anthony E. & T.	Hdw., cs. 6
Arango A.	Safe door, 1
Baring Bros. & Co.	Wire, wire, rolls, 7 $\frac{1}{2}$
Bellows, bds. 147	Tires, 100
Blomfield J. C. & Co.	Mds., pkgs. 8
Boker, Hermann & Co.	Hdw. and cutlery, pkgs. 20
Brown, Hdw., cutlery	Arms, cs. 12
Bryant & Stratton,	Gasoline, 15
Burrell & Co.	Pig, tons, 129,562
Early & Lane,	Railway Iron, bars, 564
Hdw., cks. 46	Rods, lots, 600
Ecclestone Wm.	Rubber, 12,606
Field Alfred & Co.	Rubber rods, bds., 678
Cartridge cases,	Wire rods, bds., 678
Folsom H. & D.	Bundles, 161
Arms, cs. 35	Cases, 3
Geswein T. W.	Prosser Thos. & Sons,
Hdw., case, 2	Packages, 195
Drexel, Morgan & Co.	Bundles, 9
Hdw., ck. 1	Midse, pkgs. 2
Early & Lane,	Wolff, K. & Co.
Hdw., cks. 46	Pig, tons, 684
Ecclestone Wm.	Woodford W. O.
Hdw., pkgs. 19	Bars, 87
Field Alfred & Co.	Bundles, 749
Cartridge cases,	Cases, 42
Borelli E.	Order, Bessemer steel, cks., 10
Machinery, cs. 2	Pig, tons, 129,562
Drexel, Morgan & Co.	Steel springs, kilos, 122,475
Hdw., ck. 1	
Early & Lane,	
Hdw., cks. 46	
Ecclestone Wm.	
Hdw., pkgs. 19	
Field Alfred & Co.	
Cartridge cases,	
Borelli E.	
Machinery, cs. 2	
Drexel, Morgan & Co.	
Hdw., ck. 1	
Early & Lane,	
Hdw., cks. 46	
Ecclestone Wm.	
Hdw., pkgs. 19	
Field Alfred & Co.	
Cartridge cases,	
Borelli E.	
Machinery, cs. 2	
Drexel, Morgan & Co.	
Hdw., ck. 1	
Early & Lane,	
Hdw., cks. 46	
Ecclestone Wm.	
Hdw., pkgs. 19	
Field Alfred & Co.	
Cartridge cases,	
Borelli E.	
Machinery, cs. 2	
Drexel, Morgan & Co.	
Hdw., ck. 1	
Early & Lane,	
Hdw., cks. 46	
Ecclestone Wm.	
Hdw., pkgs. 19	
Field Alfred & Co.	
Cartridge cases,	
Borelli E.	
Machinery, cs. 2	
Drexel, Morgan & Co.	
Hdw., ck. 1	
Early & Lane,	
Hdw., cks. 46	
Ecclestone Wm.	
Hdw., pkgs. 19	
Field Alfred & Co.	
Cartridge cases,	
Borelli E.	
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Drexel, Morgan & Co.	
Hdw., ck. 1	
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Drexel, Morgan & Co.	
Hdw., ck. 1	
Early & Lane,	
Hdw., cks. 46	
Ecclestone Wm.	
Hdw., pkgs. 19	
Field Alfred & Co.	
Cartridge cases,	
Borelli E.	
Machinery, cs. 2	
Drexel, Morgan & Co.	
Hdw., ck. 1	
Early & Lane,	
Hdw., cks. 46	
Ecclestone Wm.	
Hdw., pkgs. 19	
Field Alfred & Co.	
Cartridge cases,	
Borelli E.	
Machinery, cs. 2	
Drexel, Morgan & Co.	
Hdw.,	

Harrington	62/	68/	97/
Solway	62/	68/	97/
Maryport	62/	68/	96/
Asham	62/	68/	95/

CLEVELAND PIG IRON

may possibly be such a drug in your market by the time this reaches your readers that quotations will not possess much interest to them. Lest the feeling should be in the opposite direction, however, I give the present selling rates, which, for G. M. B., I. o. b. Tees, net cash, are:

No. 1 Foundry	62/	No. 4 Forges	53/
3 "	56/	Mottled	52/6
4 "	53/	White	52/
4 "	53/	Kentledge	63/

SCOTCH PIG IRON

has been amazingly irregular during the past week. On comparing two merchants' price lists issued at Glasgow on the same day, I found discrepancies amounting to as much as 2/6 for the same brand and number. Cautious critics may please bear this fact in mind. There are 114 furnaces blowing, against 88 a year since, and a stock of 437,587 tons, compared with 230,918 tons. The stock in Connal's stores decreased a further 10,424 tons last week. The shipments to date have increased 83,455 tons, on a total of 205,967 tons this year. Imports from Middlesbrough show a decrease this year of 537 tons on a total of 64,830 tons since December 26, 1879. Ballast pig is quoted by John E. Swan & Bros. at 52/6 @ 55/ per ton, alongside ship in Forth or Clyde. Warrants are a trifle better—say, 55/2.

Writing from Glasgow, April 9, James Watson & Co. reported: "There has been more fluctuation in the price of Scotch Iron warrants this week, but the advance gained in the fore part of the week has not been maintained, owing to unfavorable cable reports from America. The demand for shipping Iron continues quiet, but No. 3 is in better demand. On Monday the price of warrants bounded from 55/3 @ 57/1/2, cash, and on Tuesday forenoon this advance continued to 57/1/2, afterward relapsing to 56 3 per ton. On Wednesday the market rallied, with business done from 56/7/8 @ 57/3, cash, closing at 57/. Yesterday being the fast-day there was no market held, and to-day the market was depressed, with business from 56/ @ 55/, cash, closing buyers at the latter figure, and sellers at 55/1/2 per ton. The shipments last week were 15,822 tons, as compared with 12,653 tons for the corresponding week of 1879." We quote:

No. 1.	No. 3.
G. M. B. at Glasgow	58/6
Gartsherrie, at Glasgow	53/
Coltress	64/
Summerville	63/6
Lanarkshire	64/
Carluke	64/
Calder, at Port Dundas	63/
Glengarnock, at Ardrosson	61/
Eglinton	58/6
Dalmellington	58/6
Shots at Leith, deliv. alongside	63/

Included in last week's shipments of iron manufactures from the Clyde ports were £7000 of machinery, a steam launch, value £6000, and a barge, value £330, for Rangoon; £12,000 castings for Bombay and £7000 iron pipes for Rio de Janeiro, besides £3000 of miscellaneous articles for various destinations abroad. The

CLEVELAND IRONMASTERS' RETURNS
just out for the month of March, give a variety of particulars which, for the sake of economizing space, I summarize thus: Furnaces blowing, 110—so running on Cleveland iron and 21 on hematite or other pig; increase in number of furnaces blowing over February, 7; make of Cleveland iron, 147,904 tons—an increase of 15,123 tons over February; make of hematite and spiegel-eisen, 34,072 tons—an increase of 7,768 tons over the previous month; foreign shipments, 56,119 tons, against 35,606 tons in February; coastwise shipments, 25,256 tons—a decrease of 4,700 tons; makers' stocks, March 31, 84,880 tons—an increase of 10,874 tons during the month; stock in public warrant stores, 21,519 tons—a decrease of 7,217 tons; stock in makers' stores, 51,079 tons—a decline of 10,790 tons. The official report of the Middlesbrough Chamber of Commerce, issued to-day, states that although trade is rather dull on the surface, yet no pig iron works are altogether idle; indeed, during the past month some of the works found it difficult to deliver all the iron contracted for. The total stock of pig held in the district on March 31 was 248,476 tons, or 808 tons less than at the end of February. The report continues: "The exports from Middlesbrough amounted to 84,375 tons, being 11,270 tons more than a year ago, 12,802 tons more than in February, and 5,433 tons more than in January. Of the iron shipped, 24,526 tons went to the United States in March, against 11,056 tons only in February, and 9,100 tons in January. To Belgium, however, there was a great decrease, only 7400 tons having been shipped, as compared with 11,000 tons in February and 12,800 tons in January. The shipments to Germany were up to their old average again, 7028 tons having been sent direct, against 2810 tons in February and 1500 tons in January. The exports to Scotland have been less than one-half of their usual quantity; only 10,740 tons have been shipped, while the monthly average last year was nearly 24,000 tons. To other countries the pig iron was shipped as follows: Holland, 6328 tons; France, 8330 tons; Denmark, 389 tons; Norway, 514 tons; Russia, 185 tons; Sweden, 60 tons; Portugal, 150 tons; Egypt, 200 tons; Japan, 100 tons; Wales, 839 tons; Newcastle, 4245 tons; and other coastwise ports, 4382 tons."

AT SHEFFIELD

there is nothing particularly "neway." John Brown & Co., as well as Charles Cannell & Co., are pretty well engaged on general work, together with the new steel-faced armor plates on the Wilson and Ellis principles. Mr. Alexander Wilson, one of the patentees, is of the Dronfield Steel Works, and is brother to Mr. George Wilson, the able managing director of Charles Cannell & Co. Mr. J. D. Ellis, the other patentee, is chairman of John Brown & Co., Limited. There is, as I have stated on more than one previous occasion, no foolish rivalry between these two great concerns. Their works are contiguous to each other; their shareholders are largely identical, and their directors are (or were until quite recently) almost the same set of gentlemen. They jointly monopolize the armor-plate trade of this country, and

would, indeed, be foolish to fight. At the same time, both are real "live" undertakings. The steel houses remain pretty busy, many of them on United States orders. The same remark applies to the cutlery houses. In files, saws and edge-tools more is being done, the best outside markets being Australia and South Africa, both of which are taking superior sorts. It is believed that the trade diverted into your hands will be redirected to its old channels, owing to your high prices and the progress made among our manufacturers in respect of patterns, &c.

THE METAL, ETC., PRICES
which follow are taken from the April circular of a leading London firm:

Lead ore, picked, in 1 cwt. kegs.	Per ton.
Pig lead	16
Sheet lead	17
Lead pipe	18
Lead covered in pipes	20
Composite glass lining	30
Lead wire, No. 12, 46/ 13 to 16	36
Hand leads, 28/ deep sea leads	36
Improved lead washers	28
Lead nails	50
Tin pipe	112
Bar lead	17
Paten's shot	20
Tin in ingots	20
Plumber's solder	52
Tinman's "	52
Gen. red lead (orig. packages)	18
" Reduced No. 1 "	17
" " No. 2 "	15
" " No. 3 "	14
Glassmakers' red lead	10
Pure English flake litharge, 5-cwt. cases	19
Pure English powdered litharge	21
Good foreign flake litharge	18
" powdered	20
Pale powder litharge	19
Orange lead, powdered	31
English dry white lead	24
English ground white lead	25
No. 1	27
No. 2	27
Sheet zinc, No. 9, upward	27
Hard spelter	25
Remelted spelter	17
The discounts average 2½ per cent.	19

FOREIGN.

FRANCE.
(Moniteur des Intérêts Matériels.)

PARIS, April 11, 1880.—Metals are improving rather slowly, and are above the rule of thumb. Copper. There has been a decline all round. We quote the general list 25 francs lower, i.e., Chili Bars, 157.50 @ 170 francs the 100 kilos; Ingots and Slabs, 175.50; Best Selected, 180; and pure Corocoro Ore, 175.

Tin has been steady, and some sorts have even improved. We quote Banco and Billiton, 227.50; Straits and Austria, 227.50; and English Havre or Rosen, 230.

Lead has again shown much improvement; we quote the various sorts at Havre, 42.50 and higher; Spelter has also been ill sustained. We quote Silesian, at Havre, 54 francs; other good brands there, 53; and at Paris, 53.50. Iron.—The French Iron markets lack, most of them, all firmness and Flooring Iron to 25.50 the 100 kilos; and from France there is still some activity. Merchant Iron has come down here to 25.50 francs and Flooring Iron to 26.50 the 100 kilos; and the good many orders have been received, and the market there is slightly looking up. Most of the sales of Merchant Iron effected in that region are made at 25 francs the 100 kilos, for Coke, 270 for mixed of the first class, and special iron of prime quality brings 360. Pig Iron for casting is still nominal at 115 francs, No. 3. At St. Etienne the market is busy, and the price is tolerably steady in comparison. At the North the situation is a reassuring one. The import of Pig Iron into France in January has been 20,775 tons, against 26,151 in 1879; of Merchant Iron and Steel, 913, against 723; and of Steel, 1020, against 875. The total export of Iron and Steel has been 23,334 tons, against 10,106. Of Iron Ore the import has been from Belgium, 14,384 tons, against 11,000; from Spain, 16,318, against 38,572; from France, 14,420, against 25,229; Italy, 12,682, against 11,266; Algeria, 41,132, and other countries, 196, against 147; together, 134,110, against 138,928, a decrease of 80 tons, while there have been exported 736 tons against 716. We hear that the Thomas-Gilchrist process has been acquired by the Thomas-Gilchrist process for Soda-making Coal. There is no important change here; the price of 48 @ 50 francs being upheld. In the North and the Pas-de-Calais the market is heavy with weakness in rates. At St. Etienne the shipments have been 484 cars, against 609 and 463 the previous two weeks.

BELGIUM.
(Revue Universelle.)

BRUSSELS, April 11, 1880.—Iron.—The Iron trade here is complete to a trifling number of pieces are declining daily. Merchant Iron has been fluctuating between 170 and 180 francs per ton, but at Charleroi it experienced a sudden break to 160 francs. Sheet iron, according to thickness and quality, varies between 240 and 260 francs. Affrage Pig Iron sells at 100 francs. Meanwhile, the market has kept steady, and been even taking up a little, while the number of makers in a few orders have dropped in from Holland, and there are inquiries from the East Indies, whence nothing had been heard for three months past. There is a project on foot on the part of the Belgian government to ask the Chambers for a credit for 35,000,000 francs, to be spent on the State railroad system, a large portion of which is to be used for new material, including the 100 locomotives already ordered and 250 cars still to be adjudicated. We are glad this comes at a moment when people are so much disappointed about the spring opening not coming up to expectations. At the close, Pig Iron is quoted at 3 francs; Beans we quote at 2 francs. We hear that German Rail makers have offered Steel Rail at 100 francs. Coal.—The market is wholly unsettled in consequence of the doubtful aspect of Iron among us. There is considerable weakness, so much so that nobody can make up his mind to buy ahead for the next campaign. This causes the Coal miners to lower prices forthwith. Stocks accumulate; some mines have, therefore, resolved to remain idle on Mondays. At Liege the range is 9 @ 11.50 francs; at Charleroi the aspect is a little less discouraging; the range there is 9 @ 13.50 francs.

GERMANY.
(Borsenblatt.)

HAMBURG, April 9, 1880.—We hear from the Sarre, Lorraine and Luxembourg districts that the Iron works are busy in a satisfactory manner. It is expected that the production of Iron Ore will experience a sensible increase in consequence of the demand for the Thomas-Gilchrist process, and the contemplated erection of new works in the Dierdenhofen district. There is great activity in transportation on the Sarre Canal. The ensuing in our Dortmund report: "There has been no further decline during the week, except the tumble in Luxembourg Pig Iron, which has dropped from 110 to 95 francs. Whether or when the spring trade is to resume is still a matter of doubt. Meanwhile our works, especially the rolling mills and Bessemer works, are still quite busy, some of them provided with orders all the way in fall; but this is nearly exclusively on old orders, new ones dropping in but sparingly. We hear with pleasure that the Bocum Cast Steel plant has received orders for 1000 tons for 7000 long Steel Rails. Opinions as to the future are very much at variance; some works are engaged on fresh hands, while others have reduced new machinery intended to be put up by one-half. In our immediate vicinity a great many narrow gauge and branch railroad lines are intended to be built, the projected Soest-Werstein line will be the most important to the Iron industry of this neighborhood. We quote: Fulde Iron, 98 francs; Car Iron, 180; Boiler Sheets, 27.50; and 11 the 100 kilos. In consequence of the disappointment in the Iron trade Coal is dropping fast, and no combination can help it any more. Metals.—Lead has been in improved request. We quote: English Pig, 17.50 @ 18; ditto Sheet, 18.25 @ 18.50; Ger-

man Pig, 17.50 @ 18; and Spanish, 18.50 marks the 50 kilos. Copper is less active. We quote: Atocha Swedish, in Ingots, 74; Drontheim, 77; English, 74 @ 75; ditto Sheathing, 82 @ 83.50. Tin is looking up. We quote: English Refined 90 @ 95, and Banco, Australian and English Cannon, 94 @ 95. Spelter is unsteady. We quote: Lead Ore, 15.50; Calamine, 45.430; Merchant Iron and Steel, 17.50; Lead, 10.470; Copper, 12.50; Cast Iron and Steel, 12.50; Sheet Iron and Steel, 12.50; Gold & Silver, 160. Gold & Silver, 160.

The smelting works have turned out, in tons:

Pig Iron	2,168,193	Castings	444,497
Lignite	11,442,593	Merchant Iron and Steel	151,367
Asphaltum	45,430	Lead	10.470
Rock Salt	238,160	Copper	12.50
Nitrate	660,744	Gold & Silver	160

John Siney, ex-president of the M. and L. Association, and a prominent labor agitator, died at his home, near Saint Clair, Pa., recently of miner's consumption. He was 48 years old, and leaves a wife, but no children.

The strike at the E. & G. Brooke Iron Works, Reading, Pa., has ended, after six weeks' duration, in the defeat of the men, the works resuming at the price offered—\$5. Some of the ringleaders will not be reinstated in their places.

When the Vulcan Steel Works at St. Louis shut down it was with the intention of starting up again soon on a new scale of prices, based on the Edgar Thomson scale, with 10 per cent. added, in consideration of the reduced output. They have already secured a number of hands on these terms, and were to have started up the mills on the 26th.

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SUPERIOR QUALITY
North Carolina MICA.
We are prepared to furnish
Stove Manufacturers,
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of very best quality.
Estimates furnished on application.
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Miners and Wholesale Dealers in Mica.

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Thos. C. White & Co.,

Manufacturers of

BUILDERS' HARDWARE,

Locks, Latches, Hinges and
Bronze and Brass Goods
of all Kinds.

JAIL LOCKS.

Liberal Discount to the Trade.
Office & Factory, No. 50 Central Ave.,
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PAT. "SCREW WINDOW BALANCES."

Retail Price, \$1 per window (four balances).
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Retain Medium and Light Window Sash at
any point of opening, without loss of time or
power in closing, available if required
by drawing the adjusting screws. An ac-
quaintance with the genuine
merits of these goods, and their
simplicity of construction, will
insure to them the favor of the
user and applicator.

A Mechanism of two ways wanted,
and as easily applied to windows
as to the common sash
pulley, rendering the use of
boxy frames, boxes, pulleys,
and the perplexing task of
hanging sash unnecessary.

Sashes are locked with a meet-
ing rail and lock, and
sample set, 4 balances, sent
postage free upon receipt of \$1.
For sale by the Hardware
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ROBERT B. HUGUNIN,
Manufacturer of Screw Balances,
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For sale by BUTLER & HUNTING,
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CORN SHELLER

Is the best Hand Sheller
made; does the best work
and works the best; is war-
ranted five years.

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Sample sent on receipt
of \$5.00.

Specially adapted for export.
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CURTIS GODDARD
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CLARK'S RUBBER WHEELS,

This wheel is the
best now in the
market, and is attract-
ing the attention of large manu-
facturers on account of the great
saving of floors, which is ten times
greater than the extra cost of this
wheel.

Adapted to all purposes, viz., Warehouse trucks,
Platform trucks, scales, boxes, baskets and heavy
casters. For full particulars see the first issue of *The Iron Age* next month, or address

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Manufacturers of

CAST IRON WATER AND GAS PIPE,

With special Castings, Flange Pipe, Water Gates, Fire
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Castings of every description for Furnaces, Rolling
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ARNOLD MELLERT, Supt., Reading, Pa.

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GUARANTEED AHEAD OF ALL
OTHERS FOR MANUFACTURERS &
MACHINISTS
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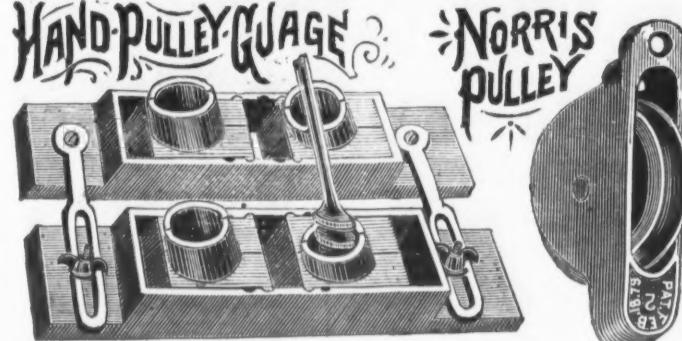
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J. BILLERBECK,
Manufacturer of
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PATENT CONCAVE OX SHOES.
The only forged Ox Shoe
made with concavity to fit
hoof, and the best and cheapest.
Also, **Flat Shoes** with
two calks at same price.

Greenfield Tool Co.,
Greenfield, Mass.

NORRIS SASH PULLEY AND GAUGE.

Patented Feb. 18th, 1879.



With one of our Gauges a carpenter can put in 20 Norris Pulleys in the time required for one of the old style.

The Hand Gauge is retailed for \$1.00 each.

The Power Machines are used by all the principal Sash and Blind Factories in this country, as they cannot dispense with them and compete with those who use them. Also,

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with Ratchet Thumb Screw, so they can be made as tight as desired.

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KIMBALL SHOVEL COM'Y.

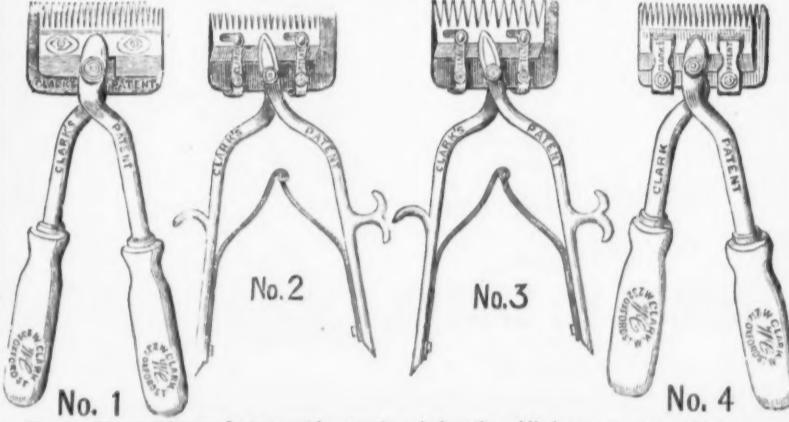
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A Sample Pulley, by Mail, costs 12 cents.

CLARK'S PATENT HORSE CLIPPERS.

Prize Medal Awarded, Paris, 1878.

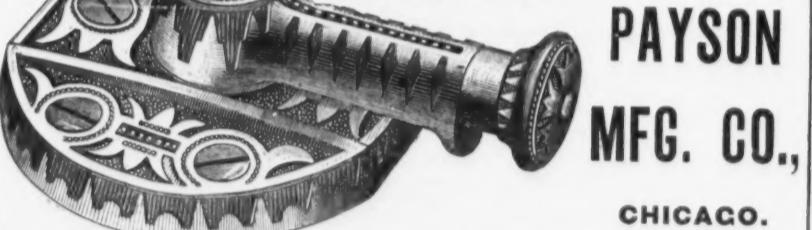


No. 1.—This well-known instrument has now been before the public for many years, and has given universal satisfaction, and is everywhere acknowledged to be by far the best and therefore the cheapest in the market. Nos. 2, 3, & 4 have also met with great success. No. 2—ONE-HANDED CLIPPER, the machine being performed by one man only. No. 3—Same as No. 2, but with coarser teeth, for legs and bellies, and coarse hair, which would break the finer teeth. To obviate the need of getting under the animal, and the consequent risk of injury to the man, and also to the machine itself. No. 3 is also used for cutting hounds. No. 4.—A TWO-HANDED INSTRUMENT, with the patent grasshopper springs over the plates. This improvement renders the machine simply perfect, producing a softness and ease of motion not to be surpassed, while by the power and combination of acting pressure of the spring, the two plates are kept in constant contact, so that the machine requires no further adjustment when changing from one size to another, equal to Nos. 2 and 3. N. B.—No stable should be without this set of incomparable instruments—none others being genuine. These Machines are fully stamped in strict accordance with the above illustrations—none others being genuine. To be obtained wholesale at **McCorquodale, 131 Dunne St., and Messrs. Hossein Bros., 122 Oxford St., London, England, and at all Saddlers, Fronmengers and Cutlers in the world, and of the Patentee, W. Clark, 232 Oxford St., London.**

"PINNACLE" SASH LOCK.

BURGLAR PROOF.

In locking, the arm is brought forward, and the spring bolt engages with the post in the back plate. In unlocking, the knob is pulled out, and the arm throws back, where it is held. Only one spring is used in the lock.

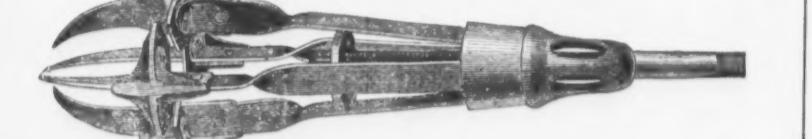


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THE NATIONAL STEEL TUBE CLEANER.
Saves its cost every time it is used.
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Delusion Rat and Mouse Trap,

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CLAUDIUS JONES & CO.,
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Have Removed to ERIE, PA.

This is the most successful Rat and Mouse
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Send for Price Lists.



TURNED MACHINE SCREWS.
One-sixteenth to five-eighths diameter.
Heads and points to sample.
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WITH

Patent Anti-Friction Springs,
FOR
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PRICE LIST.—Per Dozen Pairs.

SINGLE JOINT HINGES.

(To swing one way.)

SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2 3/8 inch.....	\$ 3 00	\$ 4 50	\$ 5 00	\$ 6 50
3 "	4 50	6 50	6 75	8 75
5 "	7 50	10 00	10 00	12 50

DOUBLE JOINT HINGES.

(To swing both ways.)

To be used on door 1 inch thick, or less.

SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2 3/8 inch.....	\$ 6 60	\$ 9 00	\$ 11 50	\$ 14 25
3 "	8 30	11 50	13 50	17 00
5 "	16 50	21 00	21 50	26 00
6 " Double for Office Doors	54 00

The large cut represents full size of our 5-inch Double Joint Acorn Tip Hinge for mortising.

The small cut represents the plain Single Joint Hinges, but not full size.

Sample pair will be sent by mail on receipt of price.

Liberal Discount to the Trade.

SCOVILL MFG. CO., Nos. 419 & 421 Broome Street, NEW YORK.



PATENT ELLIPTIC SPRING WHISTLES

We call the attention of the trade to the whistle for speaking tubes, represented in above cut, being superior, in a mechanical point of view, on account of the

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We also invite an examination of our **PATENT REVERSIBLE DOOR LOCKS**, which by their peculiar construction, combine **simplicity, strength and durability**. In these Locks the combination of the Patent Lever and Spring renders the latch movement very easy and prompt in action.

Illustrated catalogues and price lists furnished on application.

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Manufacturers of Superior Building Hardware.

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THE OHIO LAWN MOWER.



12-in. Cut....\$18.00. 14-in. Cut....\$20.00. 16-in. Cut....\$22.00.

For trade discounts, apply to

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NORTH'S PATENT

Universal Lathe Dog.

The Iron Age Directory

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Zug Co., Pittsburgh, Pa.	4
	Iron, Sheet, Manufacturers of.
Wood W. D. Co., Pittsburgh, Pa.	4
	Jack Screws.
Wright R. D., Windsor, Vt.	35
	Jointers, Manufacturers of.
Dietz H. E., 45 Fulton, N. Y.	38
Howard & Morse, 45 Fulton, N. Y.	2
Miller Edw. & Co., 35 Warren, N. Y.	25
	Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y.	4
Mass F. & Co., Springfield, O.	4
Ohio Mfg. Co., Cleveland, O.	4
Russell & Erwin Mfg. Co., New York.	22
Widmer L., Hoosick Falls, N. Y.	20
	Lemon Saws.
Onderdon Robert, 40 Grand, N. Y.	35
	Leveling Instruments.
Bicknell & Comstock, 27 Warren, N. Y.	4
	Levels.
Diaslon Henry & Sons, Philadelphia.	4
	Locks, Manufacturers of.
Bonham Wilson, Broadway and Kosuth, Brook-	24
Ivy E. D., 21 Centre, N. Y.	27
Dillman Lock Co., Philadelphia, Pa.	4
Hilbrandt & Wolf, Inc., Philadelphia.	9
Romer & Co., Newark, N. J.	11
Schröder Lock Co., Cincinnati, Ohio.	10
Smith & Eggers Mfg. Co., Bridgeport, Conn.	8
Yale Lock Mfg. Co., 33 Chambers, N. Y.	4
	Locomotives.
Porter, H. K. & Co., Pittsburgh.	20
	Lubricator.
American Lubricator Co., Detroit, Mich.	13
Fair W. J., 21 Centre, N. Y.	2
	Machinery.
Bissell & Wilcox, 165 Plymouth, Brooklyn.	36
Box Alfred & Co., 314 Green, Phila.	37
Cooke Wm., 6 Cortland, N. Y.	36
Cuyahoga Works, Cleveland, O.	36
Landsis Ezra F., Lancaster, Pa.	25
L. B. Flanders Machine Works, 1024 Hamilton, Phila.	34
Lyon E. & Co., 470 Grand, N. Y.	24
McHugh S. C., 100 Clinton, N. Y.	34
Garrison E. & Co., 51 Franklin, N. Y.	37
Mohawk & Hudson Mfg. Co., Watertown, N. Y.	8
Gram & Atherton, Cleveland, O.	22
Pittsburgh Mfg. Co., Pittsburgh, Pa.	22
Pratt & Whitney Co., Hartford, Conn.	26
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y.	37
Stokes & Parrish, Phila., Pa.	24
The Stiles & Parker Press Co., Midtown, U. S.	26
Universal Machine Works, Cincinnati, O.	26
Wetherell Robert & Co., Chester, Pa.	27
	Machinery, Laundry.
Little Chase & Fulton, N. Y.	10
	Machinery, Screw.
Hartford Machine Screw Co., Hartford, Conn.	24
Fellows John, Williamsburg, N. Y.	22
Waterbury Mfg. Co., Waterbury, Conn.	2
	Machinists' Tools.
Blaidsell P. & Co., Worcester, Mass.	35
Bullard E. P., 44 Dewy, N. Y.	10
Cook Wm. & Co., 21 Centre, N. Y.	21
Groves Plastic Molding Agency, 121 Chambers, N. Y.	21
Harrington E. & Son, 15th and Pennsylvania ave., Philadelphia, Pa.	21
J. Gray Machinery Depot, 37 Dewy, N. Y.	37
King J. M., & Co., Waterford, N. Y.	6
North Seiden G., Philadelphia, Pa.	22
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y.	37
Stockwell Screw Machine Co., Cleveland, Ohio.	36
	Malleable Iron Castings, Makers of.
Heister & Co., Bradford, Conn.	21
	Mallet & Handle.
N. Y. Handle and Mallet Works, 456 E. Houston.	24
Penfield Block Works, Lockport, N. Y.	24
	Manganese.
Pyrrolite Manganese Co., 44 Cliff, N. Y.	31
	Measuring Tapes.
Eddy Geo. M. & Co., 233 Classon Ave., Brooklyn, N. Y.	20
	Meat Chopping Machinery.
Union Iron Works, Burlington, Iowa.	21
	Metallic Powders.
Dickenson, Van Dusen & Co., 29 and 31 Cliff, N. Y.	2
Northrop A. C., Waterbury, Conn.	2
Philips Dodge & Co., Cliff, bet. John & Fulton, N. Y.	2
Phosphor Bronze Smelting Co., 203 Washington av., Phila.	23
Purves A. S., son, South and Penn, Phila.	5
Quincy J. W., 98 William, N. Y.	5
Weller W. R. & Co., 304½ Walnut, Phila.	4
Sellnow R. & Co., 312 Franklin, Mo.	4
Schoenberg Metal Mfg. Co., 30 & 320 E. 20th, N. Y.	3
Starr John, Halifax, Nova Scotia.	7
	Metallurgists.
Booth, Garrett & Blair, 210 Chant, Philadelphia.	5
Britton J. Blodgett, 330 Walnut, Philadelphia.	6
	Micron.
Peckham J. S. & M., Utica, N. Y.	22
	Miners' Candles, Makers of.
Jones Boyd & Sons, to 12 Franklin, N. Y.	28
	Mine Pipe.
Leonard Bros., Scranton, Pa.	25
Mineral Wool.	25
Elbers Alexander D., 26½ Broadway, N. Y.	27
	Molding Sand.
Whitehead Bros., 417 W. 15th, N. Y.	2
	Mouse Traps.
Dietz R. E., 24 and 56 Fulton, N. Y.	35
Jones Claudius & Co., Erie, Pa.	35
Riley Mfg. Co., Unionville, Conn.	38
	Nails.
Fuller Bros. & Co., 129 Greenwich, N. Y.	4
Oxford Iron Co., 81 Washington, N. Y.	4
Rowland Jas. & Co., 920 N. Delaware Ave., Phila.	4
Schoenberger & Co., Pittsburgh, Pa.	4
Zug & Pittsburgh, Pa.	4
	Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.	35
Nichols Bros., 100 Franklin, N. Y.	24
Condit, Hanson & Van Winkle, Newark, N. J.	28
Zucker & Levett, 340 to 344 West 10th st., N. Y.	23
	Norway Shapes, Rollers of.
Rowland Wm. & Harvey, Frankford, Philadelphia.	38
	Nuts, Bolts, etc., Makers of.
Allentown Rolling Mill Co., Allentown, Pa.	4
Haskell W. H. & Co., Pawtucket, R. I.	35
Burdissal & Ward, Post Chester, N. Y.	38
Standard & Clark, Pittsburgh, Pa.	35
Strebenbach J. H., Reading, Pa.	36
	Oil Lubrication.
Meriam & Morgan Paraffine Co., Cleveland, O.	31
Plumbago Oil Co., Rochester, N. Y.	33
	Oil Stones.
Boyd & Chase, 10th and Harlem River, N. Y.	30
	Oil Stoves.
Vapor Oil Stove Co., Cleveland, O.	34
	Ores.
Bingham C. E. & Co., Cleveland, O.	6
Jackson Iron Co., Cleveland, O.	6
Liera J., 15 Dewy, N. Y.	6
Pullman J. W., 475 Walnut, Philadelphia.	4
Rod W. H. & Co., 204½ Walnut, Phila.	4
	Ox Shoes.
Ives, Woodruff & Co., Akron, O.	3
	Packing.
Akron Rubber Co., Akron, O.	10
	Patent Solicitors.
Howson & Son, Phila. and Washington, D. C.	8
Stetson Thomas D., 23 Murray, N. Y.	8
Tracy, Dyer & Wilber, Cleveland, O.	24

Plated Ware.	
Hall, Elton & Co., 7 Chambers, N. Y.	11
The Wm. Rogers Mfg. Co., Hartford, Ct.	11
Plumbers' Materials. , <i>Manufacturers of.</i>	
Cary Wm. S. & Co., 106 Center, N. Y.	15
Everhart Jas. M., Scranton, Pa.	15
Pocket Knives.	
Boker Hermann & Co., 101 Duane, N. Y.	23
Purvis R. C., Philadelphia.	23
Sundry Mfg. Co., Buffalo, N. Y.	23
Power Hammers.	
Dienelt, Eisenhardt & Co., Philada., Pa.	26
Forsyth S. C. & Co., Manchester, N. H.	34
Presses, Fruit and Vegetable.	
Mohawk & Hudson Mfg. Co., Waterford, N. Y.	8
Presses, Power, Makers of.	
Baldwin & Peet, New Haven, Conn.	31
Miles J. Williams, 250 Plymouth, Brooklyn.	36
Merriman A. H., West Middletown, Conn.	37
Peerless Punch & Shear Co., 52 Dey, N. Y.	37
The Stiles & Parker Press Co., Middletown, Ct.	36
Pulleys.	
Renfrew Block Works, Lockport, N. Y.	28
Providence Tool Co., Providence, R. I.	13
Pumps, Makers of.	
Douglas W. & B., Middletown, Conn.	7
Gunnison A. B., Erie, Penn.	25
Hartford Compressed Air Pump Co., Hartford, Conn.	32
Rumsey Co., Somers, Falls, N. Y.	7
Rumsey L. M. & Co., St. Louis, Mo.	34
Union Mfg. Co., of Chambers, N. Y.	7
Railroad Supplies.	
Saxton & Pennell, of William, N. Y.	25
Rails, Iron and Steel, Makers of.	
Allentown Rolling Mill Co., Allentown, Pa.	25
Cambria Iron Co., Johnstown, Pa.	25
Cleveland Rolling Mill Co., Cleveland, Ohio.	25
The Edgar Thomson Steel Co., 57 Broadway, N. Y.	31
Razors.	
Taylor L. C., Rochester, N. Y.	1
J. B. Torrey Razor Co., Worcester, Mass.	10
Refrigerators.	
James, Altkman & Co., 25 Cliff, N. Y.	24
Rivets.	
Gilmor Wm., of Wm., Baltimore, Md.	38
Grundy Geo. C., 16 Greenwith, N. Y.	23
Hoopers & Townsend, Philadelphia, Pa.	35
Townsend W. P. & Co., Pittsburgh, Pa.	35
Roll Breakers.	
Blake Crusher Co., New Haven, Conn.	31
Frost & Reed Machine Co., Ansonia, Conn.	34
Gates & Crevo Iron Works, 52 Canal, Chicago.	36
Totten & Co., Pittsburgh, Pa.	35
Rolls (Chilled).	
Garrison A. & Co., Pittsburgh, Pa.	6
Rules, Manufacturers of.	
Stanley Rule and Level Co., 29 Chambers, N. Y.	3
Sax Irons.	
Chalfant Mfg. Co., 435 Arch, Philadelphia.	13
Enterprise Mfg. Co., Philadelphia.	27
Malin & Son, N. Y.	27
Sand and Emery Paper, Makers of.	
Baeder, Adamson & Co., 739 Market, Philadelphia.	
Saws, Makers of.	
American Saw Co., Trenton, N. J.	38
Boynton E. M., 80 Beckman, N. Y.	38
Diston Henry & Sons, Phila.	24
Gerlach Peter & Co., Cleveland, Ohio.	
Wheeler, Madden & Clemens Mfg. Co., Middle town, N. Y.	34
Scales, Manufacturers of.	
Buffalo Scale Co., Buffalo, N. Y.	9
Charlton John & Sons, of Cliff, N. Y.	13
Hovey Scale Co., 160 Grand, Vt.	11
Riehl, strength about Master, Phila.	21
Ross W. K., of Chambers, N. Y.	28
Southwick Hardware Co., Philadelphia.	32
Screws, Makers of.	
Billerbeck J., 12th and Venango Sta., Philadelphia.	22
Miles F. S., 305 Quarry, Phila.	13
Philadelphia Screw Co., Philadelphia, Pa.	11
Screw Cutting Machinery.	
Wiley & Russell Mfg. Co., Greenfield, Mass.	25
Screw Drivers, (Improved) Makers of.	
Coulter, Flagg & Co., 87 Chambers, N. Y.	24
Diston Hevry & Sons Phila.	24
Screws & Bolts.	
Bendixley Scythe Co., West Winsted, Conn.	35
Shears, Stones.	
Vtke A. F. Pike Station, N. H.	25
Second Hand Machinery.	
Forsyth S. C. & Co., Manchester, N. H.	34
Shafting, Makers of.	
Sellers Wm. & Co., Phila., and 79 Liberty st., N. Y.	37
Shears.	
Renz Hardware Co., Bridgeport, Conn.	10
Shears (Sheep).	
Field Alfred & Co., 93 Chambers, N. Y.	10
Hodder A. H., 12 Warren, N. Y.	10
Shears & Scissors.	
Sparks Thos. W., 121 Walnut, Philadelphia.	27
Shovels, Spades and Scoops.	
Griffiths Geo. Philada., Pa.	
Groom Shovel Co., St. Louis, Mo.	32
Hussey, Binns & Co., Pittsburgh, Pa.	12
Shutters, Steel and Wood.	
Clark & Co., 162 W. 27th, N. Y.	8
Sifters.	
Hunter J. M. & Co., Cincinnati, O.	2
Sinks.	
Magee Furnace Co., Boston, Mass.	
Smelting Works.	
Philadelphia Smelting Co., 12th and Noble st., Philadelphia.	
Reeves Paul S., 760 South Broad, Phila.	38
Snaths.	
Vermont Snath Co., Springfield, Vt.	25
Speaking Trays.	
Ostrander W. B., 19 Ann N. Y.	25
Spanning & Squier, 113 Liberty, N. Y.	2
Osgood F. C., Bergen Port, N. J.	24
Spiegelseisen.	
Wright Peter & Sons, 42 Broadway, N. Y.	5
Spoons.	
Holmes Booth & Haydens, 40 Chambers, N. Y.	28
The Wm. Rogers Mfg. Co., Hartford, Ct.	11
Springs.	
Cary & Moen, 234 W. 29th, N. Y.	5
Gautier Steel Co., Lt., Johnstown, Pa.	30
Rowland Wm. & Harvey, Frankford, Phila.	30
Dudgeon Richard, 24 Columbia, N. Y.	9
Steam Pumps &c., Manufacturers of.	
Carron A. S., East 23d, N. Y.	36
Clayton Steam Pump Works, 14 and 16 Water st.	36
Brooklyn N. Y.	
Crane Bros. Mfg. Co., Chicago, Ill.	38
Davis L. B., Hartford, Conn.	46
Kent Wm. E., 42 Cortlandt, N. Y.	24
McGowan John H. & Co., Cincinnati, O.	37
Stores G. W., 122 N. 10, Philadelphia.	50
The Norwalk Iron Works Co. So. Norwalk, Ct.	34
Steel Castings, Manufacturers of.	
Chester Steel Castings Co., Evelina, Phila., Pa.	38
Eureka Cast Steel Co., Chester, Pa.	38
Flagg Stanley G. & Co., Philadelphia.	38
Steam Boilers.	
Babcock & Wilcox, 30 Cortlandt, N. Y.	30
Steam Hammers &c., Makers of.	
Dienelt, Eisenhardt & Co., Philadelphia, Pa.	35
Dudgeon Richard, 24 Columbia, N. Y.	9
Steam Pumps &c., Manufacturers of.	
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Eureka Cast Steel Co., Chester, Pa.	38
Flagg Stanley G. & Co., Philadelphia.	38
Pittsburgh Steel Casting Co., Pittsburgh, Pa.	
Steel Importers.	
Carr J. & Riley, 30 Gold, N. Y.	37
Hobson Francis & Son, 97 John, N. Y.	10
Moore & Co., 134 and 180 Duane, N. Y.	10
Pierson & Co., 24 Broadway, N. Y.	1
Wolff, Kahn & Co., 100 Broadway, N. Y.	1
Steel Musket's Supply.	
Randall & Jones, in Oliver, Boston, Mass.	25
Steel Manufacturers.	
Albany & Rensselaer Iron & Steel Co., Troy, N. Y.	22
Atha, Benjamin & Co., 21 Pearl, N. Y.	10
Cleveland Rolling Mill Co., Cleveland, O.	10
Cocker Brothers, 'Sheffield' Fng.	10
Mitval Steel Co., Lt., Johnstown, Pa.	38 & 60
Midvale Steel Works, Nicetown, Phila., Pa.	38
Monongahela & Parkin, Pittsburgh.	30
Pennsylvania Steel Co., 25th, 4th, Phila.	25
Rowland Wm. & Harvey, Frankford, Phila.	38
Sanderson Geo. & Co., 50 Gold, N. Y.	10
Smith, Sutton & Co., Pittsburgh, Pa.	6
Singer, Nimick & Co., Pittsburgh, Pa.	6
Spencer J. R. & Son, Sheffield, England.	10
Standard Steel Works, Philadelphia, Pa.	4
The Edgar Thomson Steel Co., 57 Broadway, N. Y.	10
The Steel Co. of Scotland, 72 Pine, N. Y.	10
Wardlow S. & C., Sheffield, England.	10
Steel Spiral Springs, Manufacturers of.	
Cary & Moen, 234 W. 29th, N. Y.	3
Chatillion John & Sons, 91 and 93 Cliff, N. Y.	13
Steel Tube Cleaners.	
The Chalmers-Spence Co., foot 9th St., E. R., N. Y.	22
Steeltine.	
Bauer & Co., 65 Greenwich Ave., N. Y.	30
Stocks and Dies.	
Howard & Co., 100 Bedford, N. Y.	24
Wiley & Russell Mfg. Co., Greenfield, Mass.	25
Stove Boards, Manufacturers of.	
Ansonia Brass and Copper Co., 19 and 21 Cliff, N. Y.	9
Stove Trucks.	
Tucker Alarm THI Mfg. Co., Indianapolis, Ind.	10
Straps, Razor.	
Copeland, Hall & Co., Rochester, N. Y.	25
Torrey J. R., Worcester, Mass.	10
Stamp Puller.	
Burger M. E. & Co., Indianapolis, Ind.	10
Tacks.	
American Tack Co., Fairhaven, Mass.	8
Dunbar, Hobart & Whidden, 39 Warren, N. Y.	9
Field A. & Sons, Taunton, Mass.	9
Gandy Geo. C., 165 Greenwich, N. Y.	9
Shelton & Co., Birmingham, Ct.	25
Taps and Dies.	
Carpenter J. M., Pawtucket, R. I.	38
Manning H. S. & Co., 111 Liberty, N. Y.	10
Wiley & Russell Mfg. Co., Greenfield, Mass.	25
Thermometers.	
Tower L. C., Rochester, N. Y.	10
Tin Plate, Importers of.	
N. & G. Taylor Co., Philadelphia.	3
Tin Plate, Manufacturers of.	
U. S. Iron and Tin Plate Co., Pittsburgh, Pa.	4
Tin Ware, Stamped and Japanned.	
Bleek Davis, 65 Bayard, N. Y.	27
Haberlin, B., 261 Pearl, N. Y.	21
Standard Stamping Co., Buffalo, N. Y.	10
Vogel William, Brooklyn, E. D., N. Y.	3
Tire Upsetters.	
Little Giant Mfg. Co., Millport, New York.	25
Tissue Paper Anti-Tarnish Silver.	
Butler, Jr. H. V. & Co., 34 Reade, N. Y.	8
Tool Chests.	
American Tool Co., 16 Chambers, N. Y.	10
Tools, Steam and Gas Fitters.	
Saunders' Sons, Yonkers, N. Y.	
Trowels.	
Bruce Geo. W., 1 Platt, New York.	25
Try Squares, Bevels, &c., Makers of.	
Diston Henry & Sons, Phila.	24
Tube Expanders.	
Dudgeon Richard, 22 Columbia, N. Y.	9
Tubing.	
Merchant & Co., 207 Market, Phila.	27
Twist Drills, Makers of.	
Morse Twist Drill & Mach. Co., N. Bedford, Mass.	8
Uphoisterers' Goods.	
Turner & Seymour Mfg. Co. 81 Reade, N. Y.	
Valves, Gas, Water and Steam.	
Lutuow Valve Mfg. Co., Troy, N. Y.	36
Mohawk & Hudson Mfg. Co., Waterford, N. Y.	8
Varnish.	
Berry Brothers, Detroit, Mich.	7
Vases.	
Hall Mfg. Co., 23 Dey, N. Y.	8
Mitters Falls Co., 74 Chambers, N. Y.	21
Wheels, Railroad.	
Whitnev A. & Sons, Philadelphia.	6
Whetstones.	
Pike A. F., Pike Station, N. H.	25
White Lead.	
Brooklyn White Lead Co., 80 Malden Lane, N. Y.	32
Colgate Robert & Co., 287 Pearl, N. Y.	32
Jewett John & Sons, 182 Front, N. Y.	22
Lewis John T. & Bros., 231 S. Front, Phila., Pa.	32
Window Balance.	
Bugunin Robt. B., Wethersfield, Conn.	22
Window Springs, Makers of.	
Hammond W. S., Lewistown, Pa.	25
Wire, Manufacturers of.	
Cary & Moen, 234 W. 29th, N. Y.	3
Cleveland Rolling Mill Co., Cleveland, Ohio.	10
Gautier Steel Co., Lt., Johnstown, Pa.	38 & 60
Gilbert & Bennett Mfg. Co., 273 Pearl, N. Y.	2
Griswold J. Wool, Troy, N. Y.	2
Hanson Wire Co., St. Louis, Mo.	2
Hawkins & Morris, 10 Chambers, N. Y.	2
Prestiss Geo. W. & Co., Holyoke, Mass.	2
Trenton Iron Co., Trenton, N. J.	2
Washburn & Moen Mfg. Co., Worcester, Mass.	2
Wire Goods, Manufacturers of.	
Dufur & Co., 36 N. Howard st., Baltimore, Md.	2
Gilbert & Bennett Mfg. Co., 273 Pearl, N. Y.	2
Tate & Co., Boston, Mass.	2
Wire Nails.	
American Wire Nail Co., Covington, Ky.	34
Dunbar, Hobart & Whidden, 39 Warren, N. Y.	10
Field A. & Sons, Taunton, Mass.	10
HP. Nail Co., Cleveland, Ohio.	28
Wire Rope, Iron and Steel, Makers of.	
Broderick & Bascom, St. Louis, Mo.	2
Hazard Mfg. Co., Wilkesbarre, Pa.	2
Boehling's John A. Sons, Trenton, N. J.	2
Wrenches, Manufacturers of.	
Bemis & Call Hdw. & Tool Co., Springfield, Mass.	21
Cox A. G. & Co., Worcester, Mass.	19
Coles L. & Co., Worcester, Mass.	19
Girard Wrench Mfg. Co., Girard, Pa.	1
Wood Working Machinery.	
Forsyth, S. C. & Co., Manchester, N. H.	34
Wringers.	
Alexander T. J., Boston, Mass.	10
Graham & Haines, 113 Chambers, N. Y.	88 & 20
Metropolitan Mfg. Co., 32 Cortlandt, N. Y.	29
N. Y.	34
Peerless Wringer Co., Cincinnati, O.	

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No.	Diameter.	Height.	Price.	No.	Diameter.	Height.	Price.
20	21 inches.	34 inches.	\$17.00	24	25 inches.	39 inches.	\$26.00
22	23 "	36 "	21.50	27	28 "	41 "	34.00

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Screws, Square Head Set and Cap Screws, Machine
Bobbins, Gun Screws, Agaraffes, Studs,

And other articles turned from Steel, Iron or Brass by automatic machine.

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CROSS CUT SAWS.

Caution to Manufacturers of, Dealers in, and Users of Cross-Cut Saws and One-Man Cross Cuts:

Dealers in and Manufacturers of Saws, and Hardware Dealers generally, are hereby notified that the undersigned are the owners of the reissued Patent for Saw Handles, No. 8996, Nov. 18, 1879, original patent, Jan. 18, 1870.

Every Cross-Cut Saw having a handle, part of which, adapted to one hand, is above the blade, and part, adapted to the other hand, opposite the end of the blade, is an infringement of the said patent, and prompt legal proceedings will be taken against manufacturers of and dealers in saws provided with such handles.

The following is the claim on which we rely:

"In a cross cut saw, the combination of the saw-blade with a handle, part of which, adapted to one hand, is above the said blade, and part, adapted to the other hand, directly opposite the end of the said blade, all substantially as set forth."

HENRY DISSTON & SONS,

KEYSTONE SAW WORKS, Philadelphia, Feb. 17, 1880.

HOWSON & SON, Philadelphia and Washington, Attorneys for DISSTON & SONS.

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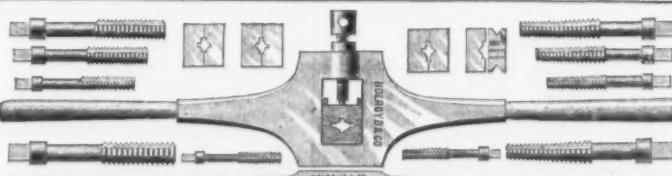
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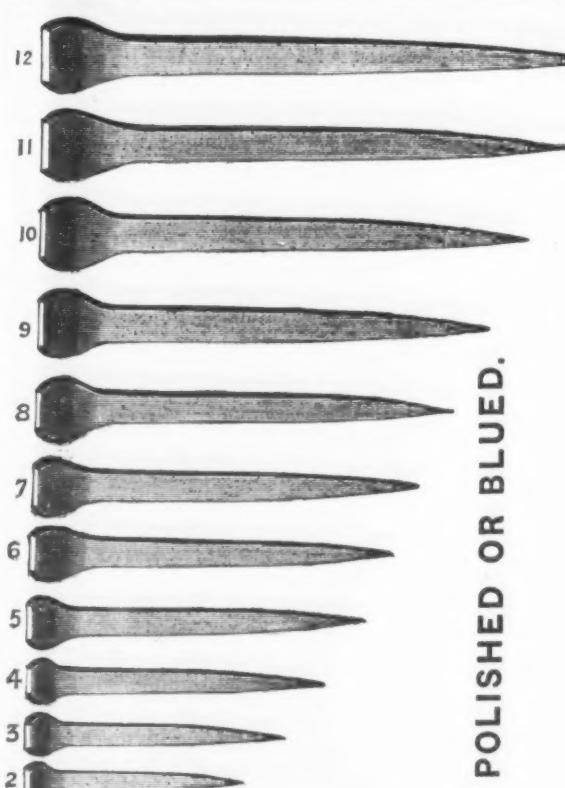
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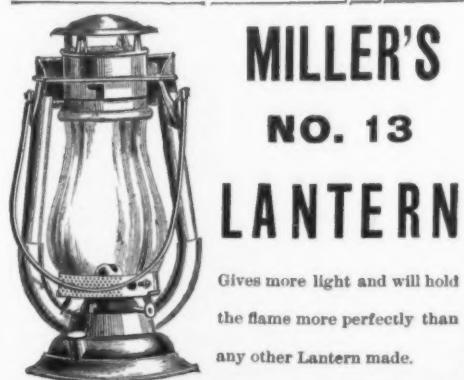
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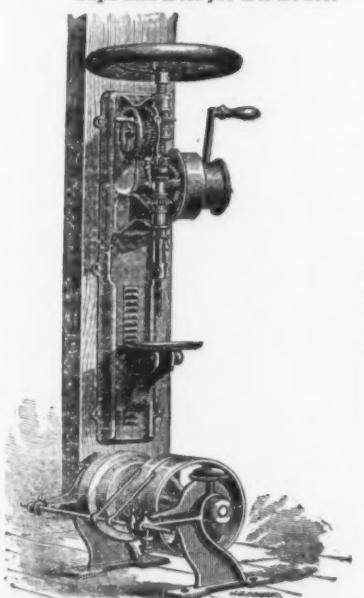
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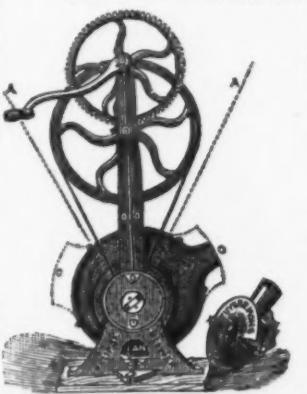
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Far excels any that has ever been made; occupying but little space; useful and ornamental. A box of Lemons can be put in the squeezer and extracting all the juice. There has never been a Lemon Squeezer made that can do what this one can.

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NEW YORK WHOLESALE PRICES, APRIL 28, 1880.

METALS.

IRON.—DUTY: Bars, 1 to 1 $\frac{1}{4}$ in. W. B.; Sheet, Band Hoop and Scroll, 1 $\frac{1}{4}$ to 3 $\frac{1}{4}$ in. W. B.; provided, that none of the above Iron shall pay a less rate of duty than 3 $\frac{1}{2}$ per cent. Fig. 8, \$ per ton; Polished Sheet, sc. W. B.; Fig. 9, \$ per ton; Tin Scrap, 50c per ton. Railroad rods 10c per lb. Boiler and Plate, 50c per lb.

Pig Iron—AMERICAN. Foundry No. 1, ... Nominal, \$ per ton \$28.00 @ 30.00. " No. 2X, ... " " 27.00 @ 28.00. Gray Forge, ... " " 25.00 @ 26.00.

Eglinton, ... Scotch, " " 24.00 @ 24.50. Coltness, ... " " 20.00 @ 27.00. Gartmarnock, ... " " 24.50 @ 25.00. Gartsherrie, ... " " 25.00 @ 25.50.

Rails. Iron, ... (nominal), \$ per ton \$60.00 @ 6.00. Steel, ... nominal, " " 70.00 @ 7.00. Old Rail, Ts (nominal), " " 28.00 @ 30.00.

Scrap. wrought Scrap, ton (nominal), \$30.00 @ 32.00.

HOT IRON, FROM STORE.—Nominal Prices.

Common Iron, 1 to 6 in. round and square, " " \$3.20.

Reduced Iron, 1 to 6 in. round and square, " " 3.50.

1 to 6 in. x $\frac{3}{4}$ to 1 in., " " 3.70.

Rods—1 and 1 $\frac{1}{2}$ round and square, " " 4.20.

Bands—1 to 6 in. to No. 12, " " 4.00.

Norway Nail Rods, " " .7.

Sheet Iron.

Common American, R. G. American, American.

No. 10 to 20, " " 6.00 6.00.

21 to 24, " " 6.50 6.50.

25 to 26, " " 6.50 6.50.

27, " " 6.50 6.50.

28, " " 6.50 6.50.

29, " " 6.50 6.50.

30, " " 6.50 6.50.

Galvanized, 10 to 20, " " 8.00 8.00.

" 21 to 24, " " 8.50 8.50.

" 25 to 26, " " 8.50 8.50.

" 27, " " 8.50 8.50.

" 28, " " 8.50 8.50.

Patent Planished, " " 13.00 13.00.

American Coat Roiled, " " 14.00 14.00.

COPPER.—DUTY: Pig, Bar and Ingot t. or Old Copper 40 c $\frac{1}{2}$ %. Manufactured (including all articles of which Copper is a component of chief value), 45% ad valorem.

American Ingot, " " See Trade Report.

Brassers' Copper, ordinary sizes, 100s per lb.

Brassers' Copper, ordinary sizes, under 16 oz. and over 12 oz., " " 4.20.

Brassers' Copper, ordinary sizes, under 16 oz. and over 12 oz., " " 4.20.

Lighter than 10 oz. W. sq. ft., " " 4.20.

Circles less than 84 in. in diameter, " " 4.20.

Circles 84 in. and over, " " 4.20.

Brassers' Copper and Pattern, " " 4.20.

Immovative Fire Box Sheets, " " 4.20.

Sheathing Copper, over 12 oz. W. sq. ft., " " 4.20.

Bolt Copper, " " 4.20.

Copper wire, " " 4.20.

No Copper is Sheathing except 14 $\frac{1}{2}$ inches and not to exceed 24 oz. to the sq. ft.

TINNING. " " W. sheet 60.

All other Sheet, 24c per square foot.

For Tinning both sides, double the above amount.

O'NEILL'S PATENT PLATED COPPER.—Net.

14 and 16 oz. and heavier, " " 200.

12 oz. and lighter, " " 140.

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14 and 16 oz. and heavier, " " 410.

By the case, " " 200.

(And all sizes not over 20 in. wide.)

14 and 16 oz. and heavier, " " 430.

Brass, " " 430.

Brown & Sharp's Gauge, the Standard for Metal; Old English Gauge, the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—See 205.

Jan. 15, 1880.

Cash prices for Roll and Sheet Brass, For less quantity than 100 lbs, add 10%.

HIGH BRASS.

All Nos. not thinner than No. 26, wider than 2 in., not wider than 1 in. 10.

All Nos. 26, inclusive, and width 1 in., " " 10.

All Nos. 26, inclusive, and width over 20 to 30 in., " " 10.

10c ad. on each No. above Nos. 26 to 30, incl.

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Sheets 24x36, and all sheets, cut to particular sizes, " " 40.

Binders' Board Cuttings, " " 40.

Binders' Board Cuttings, clean, " " 40.

Straw Board Cuttings, clean, " " 40.

Woolen Tailor Clips, " " 40.

Satinets, " " 40.

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(Dealer's Selling Price.)

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Seconds, " " 3.00.

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French Butcher Cloth, " " 1.00.

Kentucky Bagging, " " 1.00.

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Woolen bags, Kentucky Bale bags, " " 1.00.

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Book Stock, " " 4.00.

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Newspapers, " " 4.00.

Prints, " " 4.00.

Pure Manillas, " " 3.00.

Bruges Manillas and Hardwares, " " 3.00.

Combs, " " 3.00.

Binders' Board Cuttings, " " 3.00.

Straw Board Cuttings, clean, " " 3.00.

Woolen Tailor Clips, " " 3.00.

Satinets, " " 3.00.

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Black Lamp, Coach Painters, " " 2.00.

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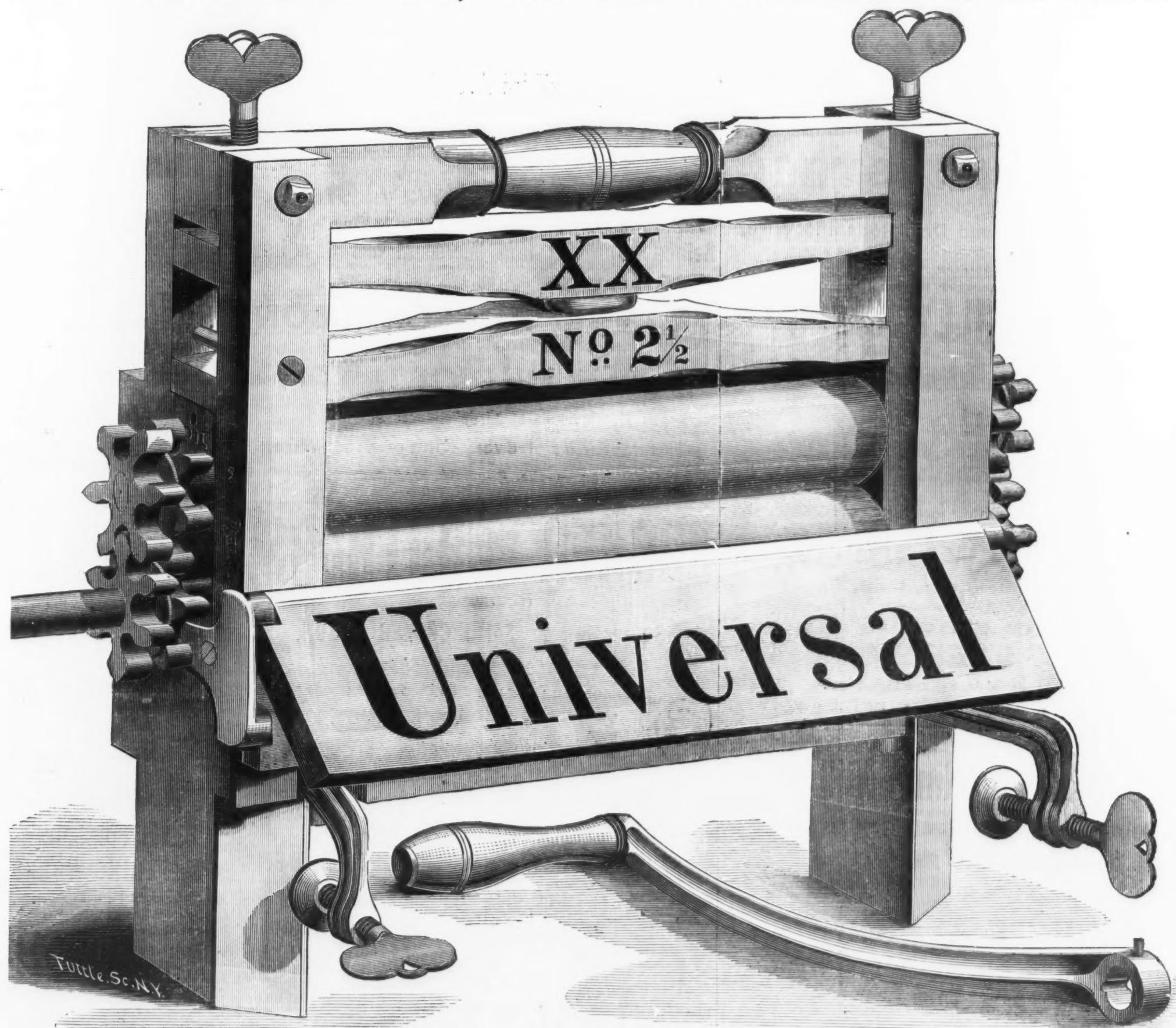
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to the *Ironmonger and Metal Trades' Advertiser*, with which is sent every fourth week the Foreign Supplement (see below), may commence from any date, but are not received for less than a year complete. The rate is \$5 per annum, inclusive of postage to any part of the world outside Great Britain. To every subscriber is presented, free, in the course of his year, a handsome and useful *Ironmongers' Diary and Text Book*, a work sold to non-subscribers at 75 cents.

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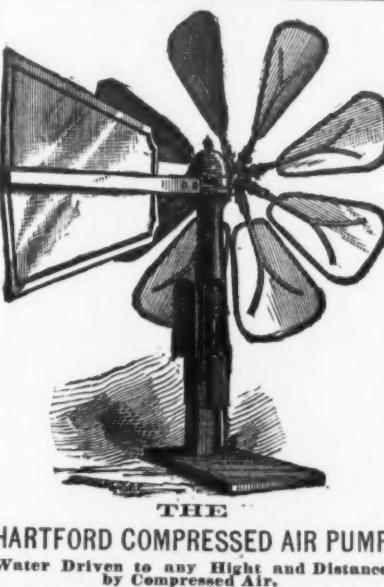
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Hammers, York & Plumb's, new list.

Hatchets, York & Plumb, new list.

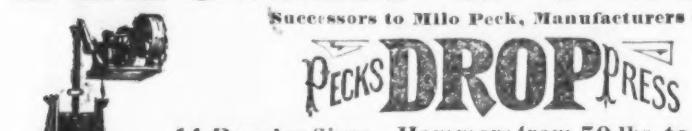
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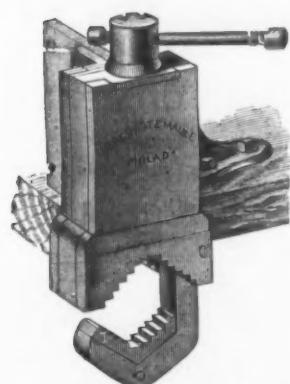
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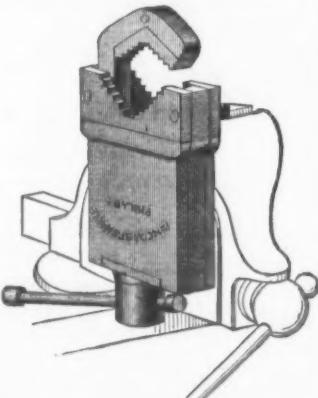
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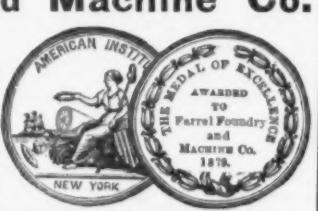
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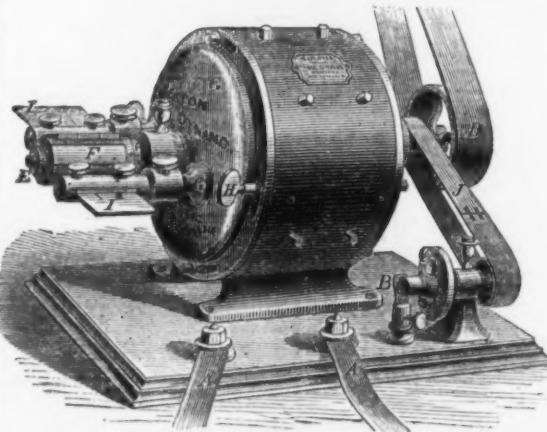
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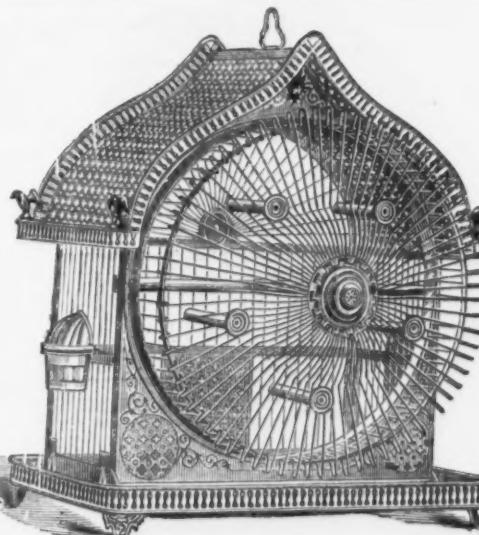
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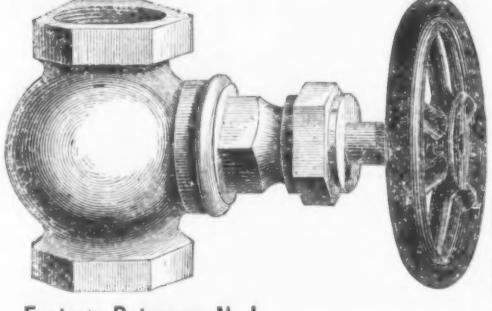
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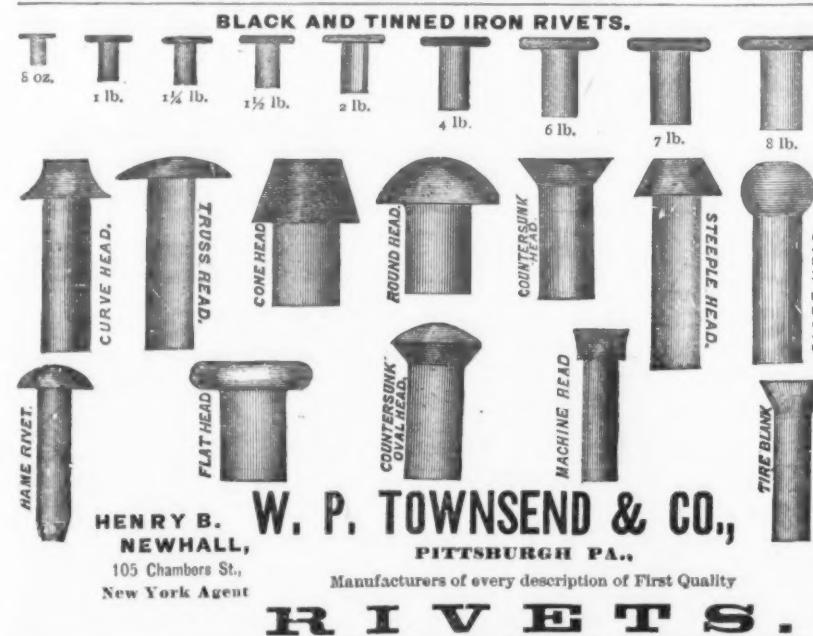
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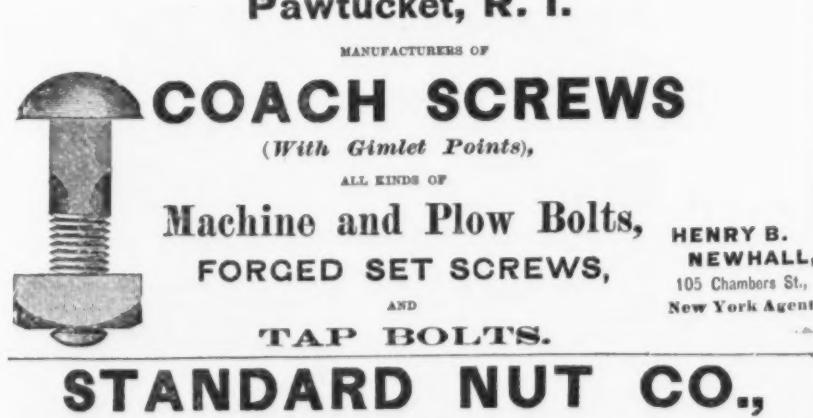
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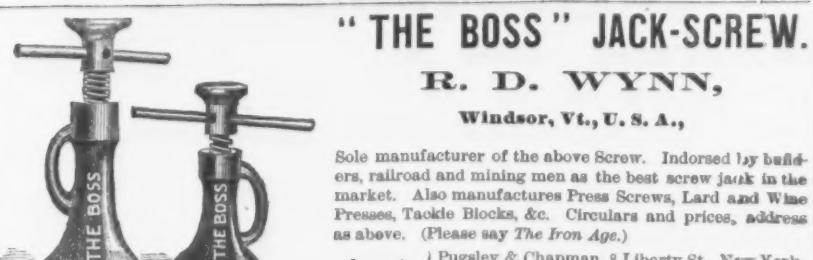


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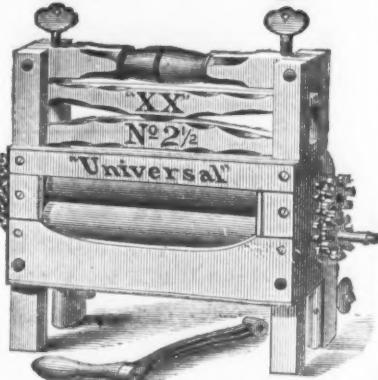
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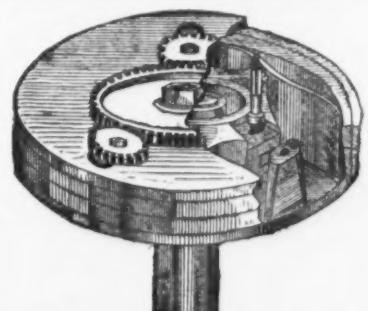
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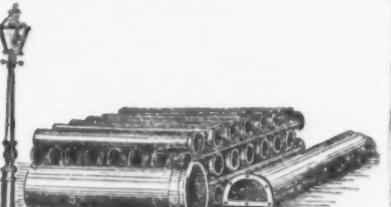
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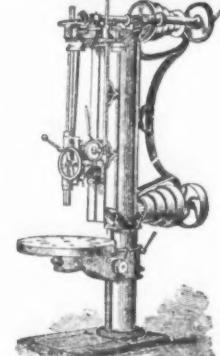
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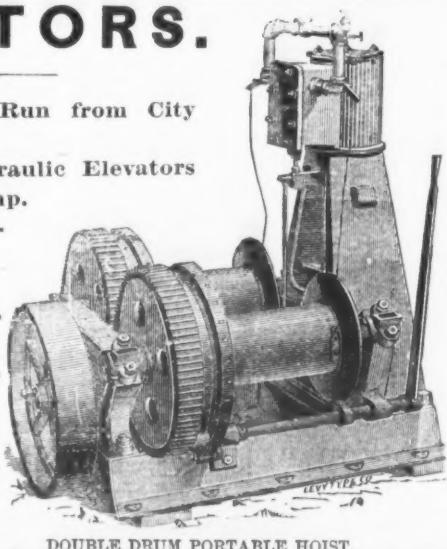
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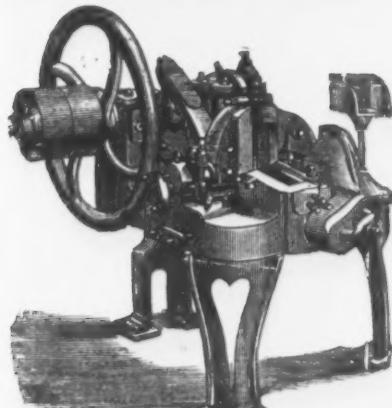
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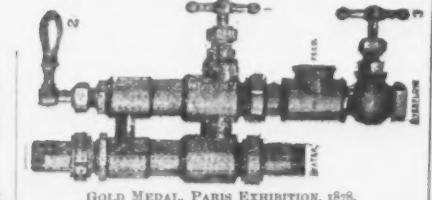
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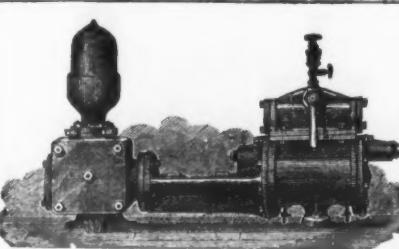


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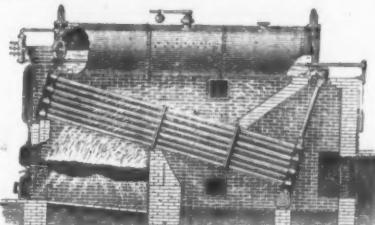
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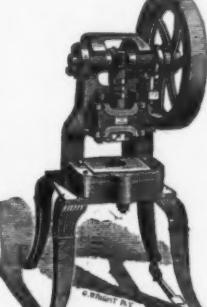


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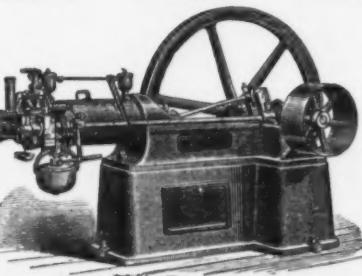
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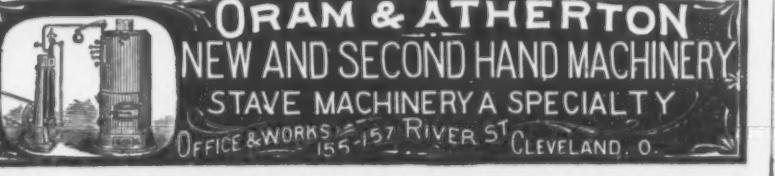
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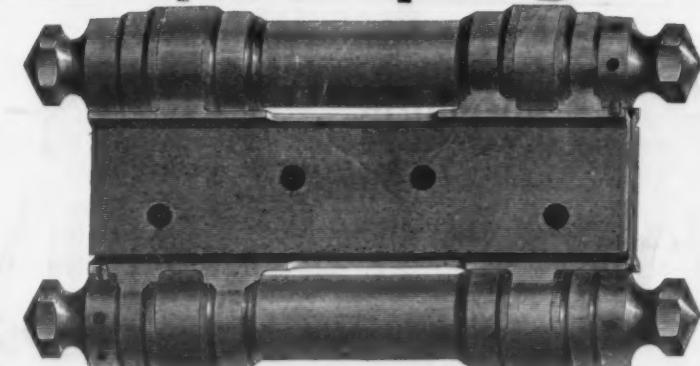
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